

# AMERICAN ARTISAN

MARCH, 1948

68th Year

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

## *In This Issue*

Bookkeeping is a subject that is of great interest. On Page 72 Betty Gough has condensed a simplified bookkeeping system that is concise and efficient.

The Silver Anniversary of the Oil Heating Industry is being celebrated in Chicago April 5-8. See the Show Section—Page 101.

All sheet metal tools are discussed by E. E. Zideck this month. See "Turning-Beading Machines"—Page 121

## **The Cover Picture**

W. Matheson, Williams O-Matic head, in action the recent Fuel Conservation Survey in Champaign Ill., sponsored by Williams. See Page 85.



# AIR CONTROL *Presents*

## THE GREATEST IMPROVEMENT IN REGISTER VALVE MECHANISM IN THE LAST DECADE



AIR CONTROL'S Engineering has developed the greatest advancement in register design in years — modern registers that operate as easily as your push button radio. No. 10 Series Registers — unequaled in the control of air distribution *both* horizontally and vertically — are now available with PUSH BUTTON Control.

Air Control's No. 10 Series Registers have many new innovations — the new Recessed Design face enhanced by the attractive push buttons — adds new beauty to this outstanding line of registers. Available in the new satin sheen Beige prime coat. This attractive finish harmonizes with modern decorations—it can be used as finished or repainted as desired.

### *A Positive Foolproof Mechanism*

The PUSH BUTTON control operates so easily — yet it has *only four moving parts!* You'll have foolproof operation with this mechanism. It's positive and dependable — no friction parts to wear — no screws to adjust — this mechanism will operate perfectly after twenty years of service. Just push a button to open or close the valve — you don't pull the register off the wall trying to free sticking levers.

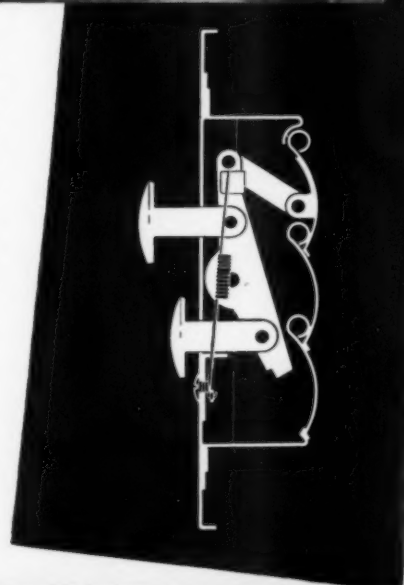
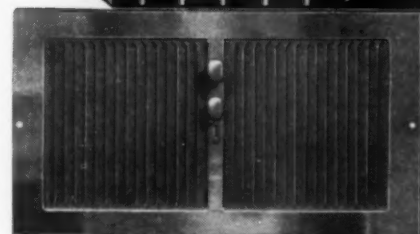
A coil spring adds extra snap to the push button action — the valve snaps tightly closed or open. An adjustable stop (located below the buttons) predetermines the open position of the horizontal louvered valve — providing any desired air deflection — up, down or straight.

Your AIR CONTROL Jobber will show you this register today. See your AIR CONTROL Jobber or write for complete information and samples.

Builders of —

AIR CONTROL Registers, Grilles, Stackhead Dampers, Etc., for every heating and Air Conditioning need. LEIGH Building Products for more livable homes.

**AIR CONTROL PRODUCTS, INC.**  
COOPERSVILLE MICHIGAN

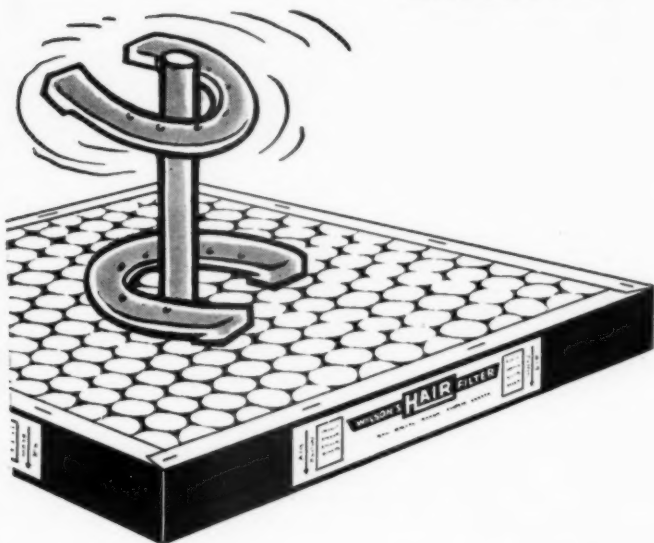




# IT'S A RINGER! IT'S A NATURAL!

"You score *every time* when you feature Wilson's HAIR Filter. Hair is a natural filtering medium. You just can't beat natural hair when it comes to the *best job* of filtering air."

*Herbert the Hare*



Building and home owners everywhere are demanding Wilson's HAIR filters. They are rapidly learning what an outstanding job this amazing "Mother Nature's

Filter" is doing. No hard, non-absorbent, man-made material can compare with hair and its natural attraction for oil. Only Wilson's Natural HAIR Filter can give your customers *double filtering action . . . greater dust holding capacity*. Cash in on this big profit-maker NOW! Send for your free sample and our generous sales proposition TODAY!



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## WILSON'S HAIR FILTER

# AMERICAN ARTISAN

Member—Audit Bureau of Circulations  
Member—Associated Business Papers

**RESIDENTIAL  
AIR CONDITIONING  
WARM AIR HEATING  
SHEET METAL CONTRACTING**

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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*Founded 1880*

**MARCH, 1948**

*Volume 117, No. 3*

AMERICAN ARTISAN, March, 1948



..... how **BIG** is your  
**FURNACE DOLLAR?**  
Consumers, dealers and jobbers all agree that .....

**SYNCHROMATIC**

offers the **biggest dollar's worth** of FURNACE  
**SATISFACTION** on the market today in ....  
Beauty, Performance, Economy, Safety, Satisfaction!



**GAS**



**OIL**



**COAL**

*For Details Write Your Jobber to day or Write Direct*

*Synchromatic Corporation*  
WATERTOWN, WISCONSIN



## The Editor's NOTE BOOK

### OHI Exposition

A preview of the Silver Anniversary Oil Heat Exposition and Convention, Chicago, April 5-8, will be found in the SHOW SECTION of this issue.

All exhibitors are listed and there is a floor plan that will guide you to where you want to go.

The exposition is under the auspices of the Oil Heat Institute of America. The convention will be held simultaneously with the exposition.

### Service Programs

With wave after wave of frigid temperatures blanketing large areas of the country during the past winter, concurrent with excessive demands on fuel supplies and transportation to distribute them, enterprising dealers anticipate keen public interest in heating service programs.

There is little to indicate that the improvement programs of the fuel and transportation industries will have progressed sufficiently by next winter to adequately cope with potential demands.

On the other hand, there is ample evidence to show that the majority of residential heating systems are in need of servicing, adjustment, or replacement before the fuel consumed can properly be termed the minimum required to heat the house.

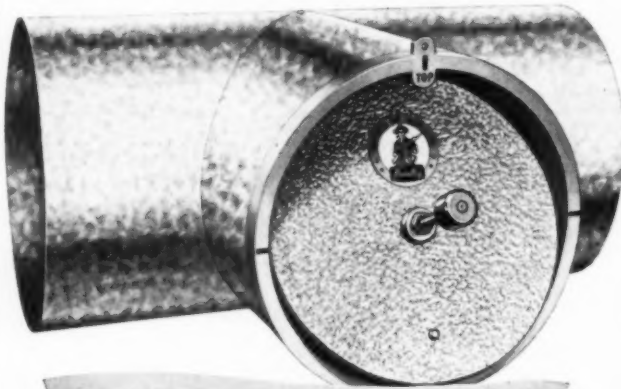
It is up to our industry—each individual business unit—to set up fuel saving and serving programs and look for fuel-wasting equipment. As shortcomings are revealed, each consumer should do something about it, for wasted fuel

# SAVE

HARD TO GET FUELS

WITH *Sentry*

## FUEL and HEAT CONTROLS



### SENTRY DRAFT REGULATORS

- FEATHER-LIGHT SENSITIVITY TO AIR CURRENTS
- COMPLETELY AUTOMATIC OPERATION
- NON-CORROSIVE BRASS BEARINGS
- FULLY WARRANTED AND GUARANTEED
- DURABLE, RUGGED CONSTRUCTION
- NO SERVICING NECESSARY

### AT-A-GLANCE TANK GAUGES

- ACCURATE CAPACITY READING
- LONG RANGE VISIBILITY
- NO COMPLICATED MECHANISM
- SAFE UNDER PRESSURE
- GUARANTEED LEAKPROOF
- UNDERWRITERS' LISTED



On guard  
24 hours  
a day!



**KRUEGER *Sentry* PRODUCTS**  
GREEN BAY • WISCONSIN

## The Editor's NOTE BOOK

takes just that much away from the national supply—from his neighbor.

Here is an opportunity for every association in our industry: To discuss and develop fuel conservation programs among its membership. So far, there has been an absence of fuel conservation in association programs.

Let us not wait and offer too little too late. Let us not wait until Government imposes restrictions which will hamper our activities. Let us not wait until unscrupulous promoters endeavor to foist fuel conservation rackets on a fuel conscious public.

Let us act now—and throughout the summer—and throughout next winter. Let us test and test and test all heating systems we encounter with instruments to insure squeezing the last Btu possible from every bit of fuel. Let us be fair and square with our program and honest in our opinion, for our industry is established in each community. The public has a right to look to us for assistance during this national need for fuel conservation.

### Indoor Comfort Conferences

Indoor Comfort Conferences, under the supervision of Guy A. Voorhees, application engineering director of NWAH&ACA, are in full swing.

A list of conferences scheduled in the immediate future is published in ASSOCIATION ACTIVITIES: See COMING EVENTS. Full particulars about the conferences in your vicinity may be had by contacting the local conference chairman.



# WEIR-MEYER DEALERS get the cream



## WEIR-MEYER MEANS MODERN HEAT FOR EVERY FUEL

### GAS



Sell the ultimate in convenience and heating efficiency! Both "hi-boy" and conventional MEYER Gas-fired Air Conditioners are available now, plus Gas-fired gravity furnaces, for L. P. as well as pipe line gas. Leak-proof heating elements of one-piece welded steel for faster heat transfer.

### OIL



Exclusive all-steel heating element with stainless steel combustion chamber assures peak efficiency, long-life, and freedom from servicing. Compact, smartly-styled Oil-fired Winter Air Conditioners include new "hi-boys" for basementless homes.

### COAL



The famous WEIR — the original steel furnace — now gives you exclusive new improvements. New Integral Heating Element (Pat. applied for) offers amazing efficiency, new cleanliness and economy. Many WEIR steel furnaces have been in continuous operation for over 50 years — still perform efficiently.

80 years experience shows that year after year the WEIR-MEYER franchise is many dealers' most valuable asset! All equipment — for all fuels — comes from one reliable manufacturer. That makes inventories lower — estimating and installation easier. And, WEIR-MEYER quality makes it easier to get the business you want.

## COMPLETE FRANCHISE PROTECTION

WEIR-MEYER's sound factory policies recognize the need for legitimate distributor-dealer profit and franchise protection. The WEIR-MEYER franchise is practical and proven — protects both your fair profit and your investment in time and money.

## SOUND AGGRESSIVE MERCHANDISING

Your customers know and want the quality, economy, and dependability that's traditional with WEIR-MEYER equipment. Consistent merchandising and advertising helps you sell. If you're not already selling WEIR-MEYER, write today. You may be in "open" territory — eligible for franchise.

## THE MEYER FURNACE COMPANY

MANUFACTURERS OF WEIR-MEYER FURNACES • AIR CONDITIONERS  
FOR GAS • OIL • COAL • FACTORIES: PEORIA AND PERU, ILLINOIS  
GENERAL OFFICES: PEORIA 2, ILLINOIS



Gas-fired  
Hi-boy



Gas-fired  
Air Conditioner



Gas-fired  
Gravity



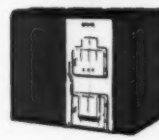
Oil-fired  
Hi-boy



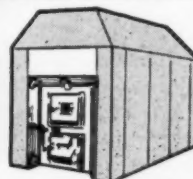
Oil-fired  
Air Conditioner



Weir  
Steel Furnace



Coal-fired  
Air Conditioner



Industrial & Commercial  
Heating Equipment

## The Editor's NOTE BOOK

### Konzo's Article Popular

I like the new way of mailing **AMERICAN ARTISAN**.

Also, I enjoyed very much the article by Professor S. Konzo on servicing and adjusting forced air furnaces in the November issue.

Enclosed is check for:

"How, What and Why"—Konzo, \$1.

"Air Conditioning for Comfort"—Lewis, \$2.

MERLE J. ANTIDEL.  
Wichita, Kansas.

### NWAH&ACA Membership

Please advise us how we can make application for membership in the National Warm Air Heating and Air Conditioning Association.

JAMES J. BUCHANAN, JR.  
Hendricks Heating Co., Inc.  
New Haven, Connecticut.

A letter to George Boedener, managing director of the association, 145 Public Square, Cleveland 14, Ohio, will bring full particulars about dealer membership.

—ED

### Want One?

A desk that does almost everything but figure out your income tax has been created for the busy businessman.

As he pulls up his swivel chair to begin the day's work, an electric eye sets off a transcribing machine that says "good morning" and brings him up to date on his appointments. Other features include an electric razor outlet, cigarette lighter, barometer, a safe for confidential papers, and a compact refrigerator to provide snacks or refreshments for important guests.



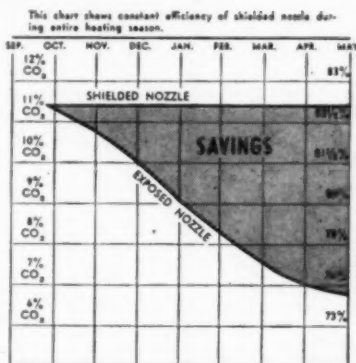
## Nu-Way OIL BURNERS with "SHIELDED NOZZLE"

# REDUCE FUEL CONSUMPTION

### Here's Proof

#### GRAPH SHOWS CONSTANT EFFICIENCY OF THE SHIELDED NOZZLE

An exclusive Nu-Way feature, the shield protects nozzle from intense heat . . . cause of clogging carbon deposits on ordinary burners. Nozzle shield reflects heat and prevents carbon from forming. By thus assuring consistent performance during the entire heating season, Nu-Way's Shielded Nozzle saves fuel oil . . . reduces operating costs. This Nu-Way feature supported by actual proof makes sales . . . both REPLACEMENT and CONVERSION.



**BACKED BY 26 YEARS EXPERIENCE** — Nu-Way has acquired a world-wide reputation of quality and service. Tens of thousands of NU-WAY oil burners have been installed throughout the country. Besides adhering to the initial high standard of production, Nu-Way engineers have introduced many advance developments in the field of automatic oil heating.

Nine other big features are incorporated in Nu-Way Oil Burners. Write for new folder featuring the complete Nu-Way line!

THE  
**Nu-Way**  
CORPORATION

Rock Island, Illinois  
Serving Distributors, Furnace and  
Boiler Manufacturers

"Automatic Oil Heat Exclusively Since 1921"



## The Editor's NOTE BOOK

There are panels that control air conditioning, room lighting, intercommunication, a recording system, and a dictating machine.

The desk is semi-circular so the executive can reach any part of it from his chair.

### Lots of Air

The new 26-story John Hancock Life Insurance building in Boston, regarded by many as one of the most advanced in the use of architectural design and mechanical equipment to promote efficiency and comfort, provides over 30 million cubic feet of air per hour for the workers who spend one third of their day at work within the structure.

At a time when convection heating is often referred to as detrimental to comfort, it is refreshing to see a recognition of the value of air motion and ventilation.

Adjustment of forced air heating systems as recommended in the C A C program of NWAH&ACA insures providing the gentle air circulation that is so vital to comfort.

### Cost of Living

The Consumer Price Index of the Bureau of Labor Statistics has become a handy means to determine the increase in the cost of living.

From December 1946 through February 1947 the BLS Index was stable at 153.3 (1935-39 = 100). In March 1947 it rose to 156.3 and in May dropped to 156.0. Since then it climbed steadily to 167.0 for December.

Many wage rates are now tied to the BLS Index.





# Steel for you is basic

Bars

Plates

Expanded  
Metal

Structurals

Sheets

**NOTHING** is so important today in many businesses as a supply of steel. With so much at stake, the responsibilities of a warehouse to its customers are increased many times beyond the superficial delivery of some emergency shipment surrounded with the element of drama.

Warehouse service today, as we see it, is to solidly identify ourselves with the interests of our customers every day in the year . . . to work functionally, shoulder to shoulder, with warehouse buyers to augment the steel supplies required. Our aim is to put more emphasis on accomplishment, less on explanation . . . to deliver a brand of service that gets steel thru.

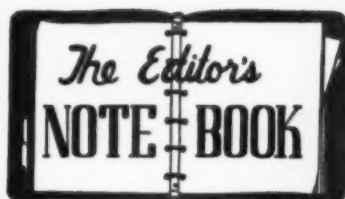
Under these conditions it is difficult to absorb new accounts, but if you would like to discuss any possible application of Wolff Metals Service to your business, phone or write today.

**Steel • Copper • Aluminum • Tin Plate**

**BENJAMIN WOLFF & COMPANY**

General Office and Warehouse — 5800 South Seeley Ave., Chicago 36, Ill.

Wisconsin Office — 174 W. Wisconsin Ave., Milwaukee 3, Wis.



### Conjecture

The commodity price break in early February had many of us in a dither.

That is, the radio commentators had us in a dither.

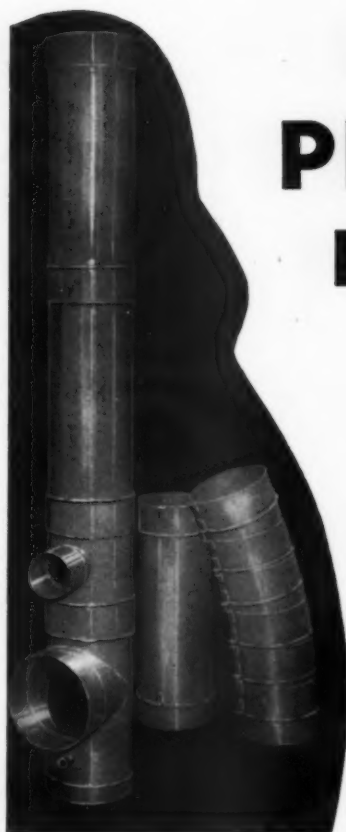
After hearing all the announcements, it was difficult to decide whether you could go out and buy butter the next morning at 50 cents a pound, whether its price would sink into oblivion, or whether to go out and buy a warehouseful in anticipation of an immediate price advance.

Such is life in a land of radio commentators—and conjecture.

### Fox Farming

We thought we had heard about all of them, and then came the Federal loan program for the silver fox farmers. This would involve \$8 million.

We asked our secretary (who tells us she is more interested in mink) to check up for us, and the story is this: By 1944 simply everybody got to wearing silver fox, and so that made this fur pretty fashionable. The raw skins had been selling for about \$50 each. Now are selling for half that much. The New Look has not helped either, because it calls for short-haired furs. This means—the silver fox raisers say—that fur farmers lose money on every silver fox pelt they produce, and so what could be more natural than for them to turn to the Federal government? They have done that. They have asked Congress to authorize the Farm Credit Administration to lend them \$8 million. The fox farmers believe this will give them "a chance to work out their problems."



# EXTRA PROFIT For You

## Install VITROLINER CHIMNEY LINING

**Dealers—**You can quickly build up a thriving business lining old or new masonry chimneys—ideal for gas or oil fired heating plants where protection against acid bearing condensation is important.

VITROLINER insures longer life to the chimney—increases stack temperature (heats and cools quickly) providing better draft to carry gases out of chimney.

VITROLINER is made of heavy gauge steel completely coated inside and out with acid resisting porcelain fused into the steel at 1575° F. to prevent corrosion. VITROLINER drains the condensate harmlessly away into the ground preventing deterioration of brick work.

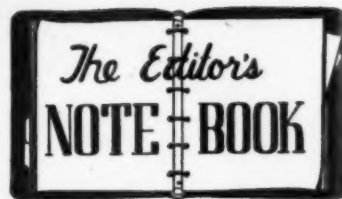
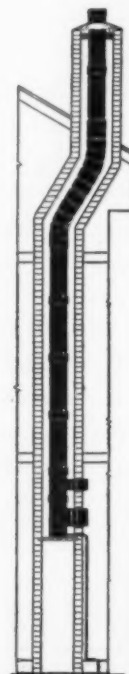
VITROLINER can be installed in a few hours. It will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

VITROLINER has been used for the past 18 years and is proven through a long field record.

We invite correspondence from reliable dealers who can contact and service installations in a few still available cities.

Write today for literature and prices.

**CONDENSATION ENGINEERING CORPORATION**  
122 S. MICHIGAN AVE. CHICAGO 3, ILL.



If Congress believes these loans too risky, we would like to suggest several other possible plans:

1. The Federal government might buy up all the silver fox production, and store the pelts underground at Fort Knox.

2. Or, if Fort Knox is found already over-crowded, every third silver fox might be plowed under.

3. Or the Federal government might pay the fur farmers for not raising silver foxes.

We had an uncle who owned a livery stable, and when the automobile got to be popular he just had to switch over, although he never did stop liking horses better than automobiles. Of course, that was back before economic enlightenment.—*Tax Outlook*.

### Clothes Driers

Clothes drier installations create a demand for air handling equipment.

Good ventilation is a prerequisite because the moist air thrown out of the drier will find its way throughout the house and cause condensation on cool surfaces unless an exhaust fan removes the damp air.

### 100,000 Freight Cars

The railroads expect to acquire 100,000 freight cars this year. This will take some of the strain off transportation and at the same time help production. Supplies to feed production lines will be more ample and finished products will be removed from production centers more quickly.

Delivery of new cars is now running ahead of retirement of old ones.



The Mayflower Series GAV-O Oil-fired Furnace  
for Gravity or Forced Air Application

*The Standard of Excellence for the Small Home*



**MAYFLOWER**  
AIR-CONDITIONERS, INC.

SAINT PAUL

MINNESOTA



## The Editor's NOTE BOOK

### Fuel Oil Tanks

Increased fuel oil storage facilities on consumers' premises offer another method to ease local fuel shortages next winter. Where there is capacity to store only 275 gallons, an additional tank will double the capacity, and at the same time relieve some of the strain on transportation next winter during severe weather.

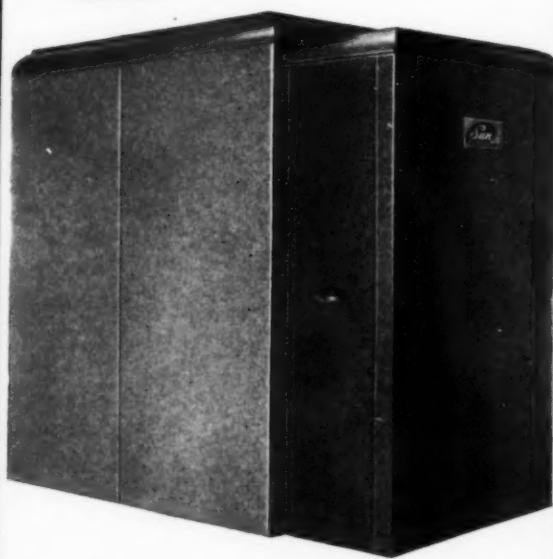
The supply of fuel oil storage tanks has eased during the winter and production of aluminum tanks in the immediate future will contribute further to the supply.

There will be many opportunities to sell a second tank by impressing upon consumers the advantages of filling two tanks to capacity during the summer.

### "Who Promised What?"

Now that the winter is about over several phases of the fuel oil shortage remain adverse to the installation of new oil heating equipment. All winter long attention was focused on the increased demands for fuel oil for residential heating while little was said about increased demands for petroleum products by other industries. A few voices in the wilderness referred to the fundamental need for maintaining a reasonable degree of comfort in our homes—at the expense of other demands, if necessary.

Little relief was promised from an adjustment of our import-export balance in the future. *The Bridgeport Post* commented on this editorially during the winter and noted that the long predicted fuel



ATTRACTIVE  
DEPENDABLE  
EFFICIENT  
AND  
AVAILABLE  
NOW!

PRICES ARE RIGHT  
DELIVERIES ARE IMMEDIATE  
FRANCHISES ARE AVAILABLE

Five Sizes—Bonnet Deliveries—  
80,000 — 100,000 — 135,000 — 165,000  
and 200,000 B.t.u.

We are now back in full production in our brand new factory building—making more and better SUN Fuel-Master Automatic Oil Furnaces than ever before.

NEW SIX-PAGE BROCHURE NOW READY

**J. V. Patten Company**  
Sycamore, Ill.

## The Editor's NOTE BOOK

shortage was really here. It mentioned Hartford (Connecticut) residents lined up in front of the firehouse to get emergency permits to buy furnace oil.

The *Post* then comments on a State Department objection to a Senate bill forbidding the export of petroleum during the domestic crisis because it would be a betrayal of the promise "we" made to Europe.

"Note the use of the word 'we,'" says the *Post* in its editorial "Who Promised What?" "Who made the promise? Did you, dear reader? No, we thought not.

"Did Congress? No. Then who did? Some silk-hatted, bespattered, striped-trousered diplomat in the Department of State made the promise, so we must all abide by it. That's the situation as we understand it.

"Now why doesn't some Senator with brains and gumption—say our own Raymond E. Baldwin, for instance—get up and ask some pertinent questions?

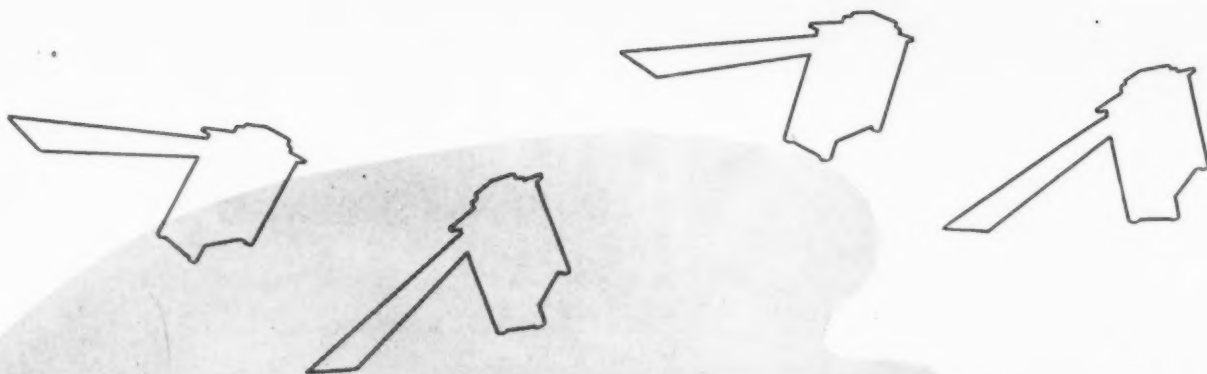
"Who made these promises and on what basis?

"Did the person who made these promises have any accurate information as to the domestic oil supply when he engaged, in the name of this nation, to send so many million barrels to Europe?

"... Are we going to ship wheat, meat, oil, and all the other essentials abroad on the say-so of half-baked underlings in the State Department who doesn't know what's going on in his own country?

"We'd like to have those questions asked and answered."

P.S. So would we.



## HOW MANY LOCKFORMERS HAVE YOU *Paid for but didn't Get?*

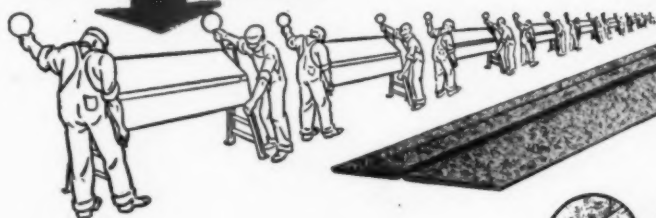


Lockformers make Pittsburgh Locks fifteen times as fast as you can make them on a hand brake! Contractors tell us that this production speed cuts over-all fabrication costs more than 50%.

THAT'S WHY YOU DON'T NEED BIG VOLUME TO JUSTIFY A LOCKFORMER — why savings on even one small job "pay" a big part of the Lockformer's purchase cost. Passing up savings like these is just poor business; it's like paying for a Lockformer — over and over again — and still not getting one!

If you are considering any warm air or ventilating work for your shop, you should have a Lockformer. Write us for literature and the name of the Lockformer Distributor nearest you.

ONE MAN WITH A LOCKFORMER CAN MAKE MORE  
PITTSBURGH LOCKS THAN SIXTEEN MEN  
WITH EIGHT BRAKES



# THE LOCKFORMER CO.

4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

# KNOCK-OUT NEWS

THE SENSATION OF THE NEW YORK HEATING SHOW



PATENTS PENDING

*Individual Room Temperature Control—AUTOMATICALLY*

*The New*

## DOLE

### THERMO-MATIC

(REG. U.S. PAT. OFF.)

### REGISTER

*for Forced Warm Air Heating Systems*

**DOLE** manufactures AIR and VACUUM VALVES for heating systems and WATER MIXERS for domestic use

- Operates thermostatically from room air.
- Very sensitive: Modulating effect: Output is regulated to meet heat losses.
- Completely self-contained; no wires to run — no bulbs to locate — very simple to install.
- Simple setting of the thermo-dial assures room temperature control — as desired — corrects many unsatisfactory heating installations: Materially improves any forced warm air system.
- A zone control for every room.

The Dole Valve Company  
1933A Carroll Avenue  
Chicago 12, Illinois

Please send me facts about the new DOLE THERMO-MATIC REGISTER for forced warm air heating systems.

NAME \_\_\_\_\_

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CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Classification  
☐ Dealer ☐ Jobber ☐ Architect  
☐ Builder ☐ \_\_\_\_\_

*Post Yourself*

ON THIS NEW DEVELOPMENT

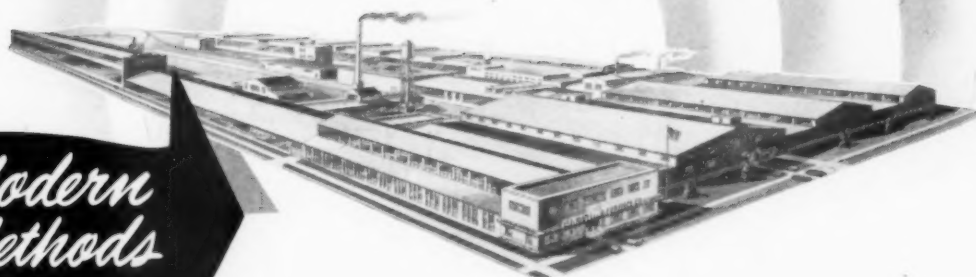
SEND THE  
COUPON  
NOW





Left — The Mueller Climatrol Series F-B Coal-Fired Winter Air-Conditioner: Cast iron, available in five sizes from 20" to 30" firepots.

Above — The Mueller Climatrol Type 702 Coal-Fired Winter Air-Conditioner: Steel, available in three sizes — 20", 22", and 24".



*Modern  
Methods*

## ...give you **Mueller Climatrol Products** that you can sell with confidence and pride

If you could make a trip through Mueller's modern factory, you'd know why you can always count on Mueller Climatrol to deliver the goods. It covers a broad expanse of over 15 acres. Every square foot is devoted to the manufacture of quality products by the latest methods and equipment — to give you every competitive advantage in your selling — and to give your customers extra-dollar value in quality!

The heart of this great modern plant is the Mueller Climatrol engineering laboratory. Its job is to keep Mueller Climatrol products in the lead. That standard has built the 91-year reputation of the Mueller name. That standard has kept the Mueller Climatrol dealer on top.

You can chalk up another successful job every time you install a Mueller Climatrol! Experience has taught you that. You know Mueller Climatrol delivers years of satisfying comfort with economy. And you know you've gained another warm supporter to whom you can refer future prospects.

Sell Mueller Climatrol for every job — it really pays! For additional information — write for bulletins today! **L. J. Mueller Furnace Co., 2010 W. Oklahoma Avenue, Milwaukee 7, Wisconsin.**

Visit the **MUELLER CLIMATROL** display  
in Space 405, National Oil Heat Exposition  
— Coliseum, Chicago, April 5-8.

**MUELLER**

*Climatrol*

REG. U. S. PAT. OFF.

D-84



FOR GAS



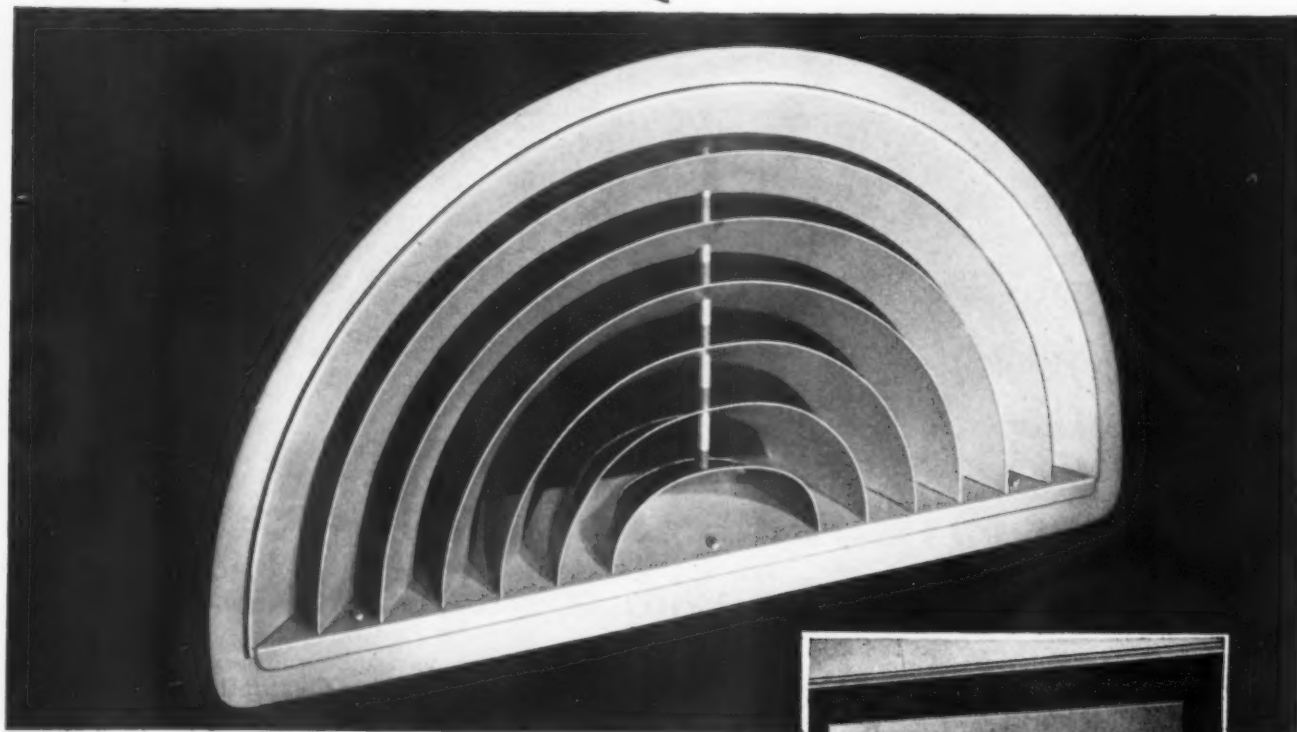
FOR OIL



FOR COAL

**NO OTHER**  
*Wall Type*  
*Air Diffuser*  
**GIVES THESE RESULTS**

- No drafts... no stale air pockets
- Prompt equalization of room temperature and humidity
- Effective diffusion over an area of 180°
- Comfortable air motion
- Handles any specified number of air changes



Frequently in either existing or new air conditioning systems, air supply outlets must be located on walls rather than ceilings. This introduces serious air distribution problems which can then be solved by installing wall-type Anemostat air diffusers . . . for only Anemostat offers a method of air distribution which produces draftless comfort under these circumstances.

Anemostats provide proper air diffusion in over 100,000 air conditioning, heating and ventilating installations. Without exception, owners enthusiastically report complete satisfaction.

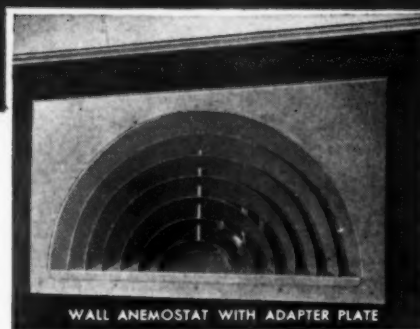
Plan for Anemostats in new systems. Use them to correct systems that do not provide satisfactory comfort conditions. Our engineers will gladly assist you.

**ANEMOSTAT**  
REG. U. S. PAT. OFF.

**DRAFTLESS AIR-DIFFUSERS**

**ANEMOSTAT CORPORATION OF AMERICA**  
 10 EAST 39th STREET, NEW YORK 16, N. Y.  
 REPRESENTATIVES IN PRINCIPAL CITIES

AO-1191



WALL ANEMOSTAT WITH ADAPTER PLATE

### *How Anemostats Work*

The principle employed in handling air through the Type "W" Wall Anemostat is the creation of a multiplicity of air currents traveling in layers or blankets at a variety of angles to each other, together with the creation of a multiplicity of counter-currents, and the creation of an aspiration effect by which 35% of room air is drawn into the device where the room air mixes with the cooled or heated air before the primary supply air is discharged.

*"No air conditioning system  
 is better than its air distribution"*

# shut that door!

"were ya born in a barn?"



## *the "barn" door of a service station makes a heating problem..*

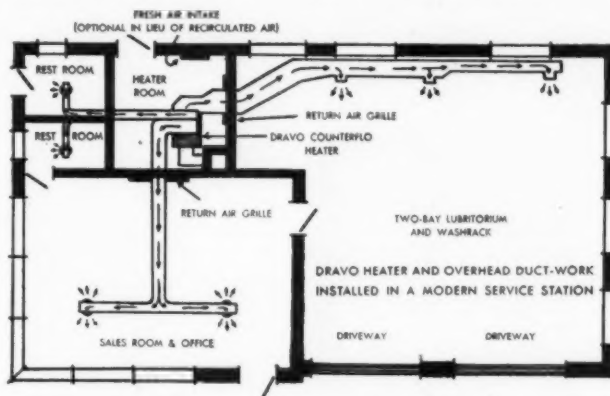
● One of the most difficult structures to heat properly is a modern service station. Improved service increases the complexities of the operation and with it the heating problem. A major oil company studied these problems in an effort to heat properly a chain of 100 new service stations being built in the north-central states. Two 10' x 10' doors, opening many times a day into the lubritorium, demanded a fast output of heat—yet other sections of the station could not be over-heated.

The oil company's engineers found both fast output and flexibility in a "three-zone" system designed around an oil-fired Dravo Counterflo Heater with a capacity output of 400,000 BTU per hour. Instantaneous heat delivery is sufficient to restore heat losses in the lubritorium within ten minutes—yet temperatures in the

In the past, many different systems were tried for heating this company's service stations. Steam or hot water systems required attendance and maintenance—and were subject to freeze-ups. Other types of warm air systems had inadequate capacities. In Dravo Counterflo Heaters, company engineers found the instantaneous automatic heat delivery they needed for their 100 new service stations.

office-display room and two lavatories can be held at comfortable thermostat settings. The heater, located in a small auxiliary room is entirely self-contained and completely automatic. During summer months, a touch of the selector switch converts the Dravo Counterflo Heater immediately into a powerful air-circulating unit.

Dravo Counterflo Heaters are available in sizes ranging from 400,000 to 2,000,000 BTU output per hour. They are equally efficient with oil or gas—with or without duct-work. They require only a fuel line, power line and vent stack—can be floor-installed, wall-hung or roof-hung. Bulletin GR 516 describes the Dravo Counterflo Heater completely. Write for it. Heating Section, Dravo Corporation, Dravo Building, Pittsburgh 22, Pa.



Dravo also manufactures the DRAVO CRANE CAB COOLER for air conditioning hot-metal crane cabs.

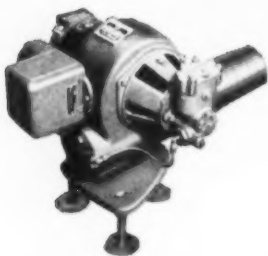
## **DRAVO CORPORATION**

Sales Representatives in Principal Cities

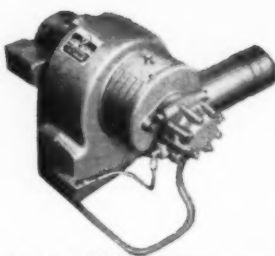


PITTSBURGH • CLEVELAND  
PHILADELPHIA • DETROIT  
NEW YORK • CHICAGO  
ATLANTA • BOSTON

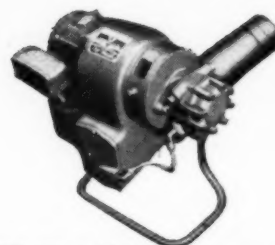




**MODEL FM-7** high pressure, atomizing type oil burner, available in capacities from 3.50 to 8.20 gallons per hour.



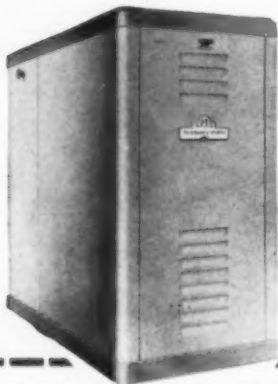
**MODEL FM-3** high pressure, atomizing type oil burner, available in capacities from 1.35 to 3.00 gallons per hour.



**MODEL FM-1** high pressure, atomizing type oil burner, available in capacities from .85 to 1.35 gallons per hour.



The Fairbanks-Morse Hi-Boy all steel, gas-fired, package-unit furnace, available in 70,000 and 105,000 BTU capacities.



The Fairbanks-Morse all steel, oil-fired, package-unit furnace, available in 90,000 and 130,000 BTU capacities.



The Fairbanks-Morse all steel, oil or gas-fired boiler, available in capacities of 320 to 900 standing feet of steam radiation.



The Fairbanks-Morse all steel, gas-fired, package-unit furnace, available in 70,000, 105,000 and 140,000 BTU capacities.



The Fairbanks-Morse all steel, coal-fired winter air-conditioner. A gravity and forced warm air furnace available in sizes of 20", 22", 24" and 27".

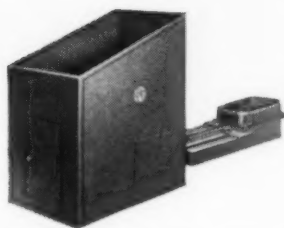
*17 WAYS to make a profit!*

Sell the  
complete line of

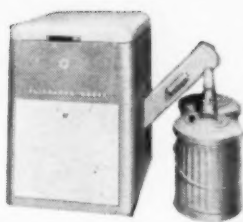
**FAIRBANKS-MORSE**

Coal, Oil and Gas Furnaces . . .

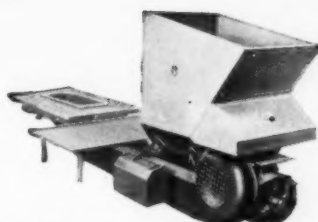
Stokers and Oil Burners



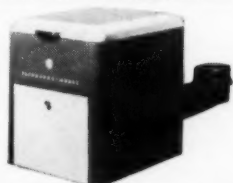
**MODEL D** series hopper type commercial stoker, available in coal burning capacities of 75, 100 and 150 pounds per hour.



**MODEL AH** hopper type anthracite stoker with automatic ash-removal. Available in capacities of 400, 600 and 800 standing feet of steam radiation.



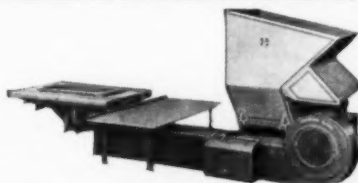
**MODEL H** series industrial type stoker, available in coal burning capacities of 175 and 225 pounds per hour.



**MODEL B-15** bituminous stoker features high and low feeds of 9 and 15 pounds of coal per hour.



**MODEL Z** hopper type bituminous stoker, available in coal burning capacities of 30 and 50 pounds per hour.



**MODEL N** series industrial type stoker, available in coal burning capacities of 250, 350, 500 and 630 pounds per hour.

**NOW** you can offer prospects any type of heating system they want...meet competition on any basis of quality, performance and service!

**HERE'S EVERYTHING** a dealer in heating equipment needs to *Sell! Sell! Sell!*... new installations and conversions alike!

**COAL FURNACES** with eye appeal that makes the precision engineering and high quality construction it conceals easier to sell!

**STOKERS**—domestic, commercial and industrial—for anthracite and bituminous fuel—to help you cover the field!

**OIL BURNERS** for almost every need—with capacities ranging from .85 to 8.20 gallons an hour!

**PACKAGED UNITS**... heating and air-conditioning... for coal, gas and oil fuels! Modern! Colorful! Efficient!

**PLUS**—a dealer set-up you'll like... advertising that keeps on selling for you... and a name the nation has known and respected as a symbol of fair dealing and quality products since 1830—*Fairbanks-Morse!*

Get in on this opportunity while your territory is still open. Write Fairbanks, Morse & Co., Chicago 5, Illinois.

## See Our Complete Display

NATIONAL OIL HEAT EXPOSITION

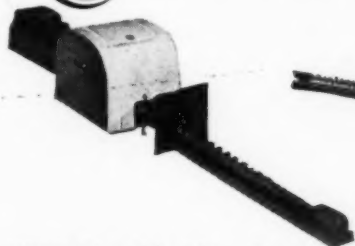
Coliseum—Chicago, Illinois

APRIL 5-8—BOOTH 610

# FAIRBANKS-MORSE



**A name worth remembering**



**MODEL ZB** self-feed bituminous stoker, available in coal burning capacities of 15, 30 and 50 pounds per hour.



**MODEL BD** self-feed commercial type stoker, available in coal burning capacities of 75, 100 and 150 pounds per hour.



**MODEL AB** self-feed anthracite stoker with automatic ash-removal. Available in capacities of 400, 600 and 800 standing feet of steam radiation.

DIESEL LOCOMOTIVES  
DIESEL ENGINES  
STOKERS  
SCALES  
MOTORS  
GENERATORS  
PUMPS  
RAILROAD MOTOR CARS and STANDPIPES  
FARM EQUIPMENT  
MAGNETOS

# thatcher's new 550

**OPENS UP NEW MARKETS FOR YOU**

Now You Can Sell Thatchers To **EVEN MORE HOME OWNERS!** Fully automatic, oil fired — Thatcher's newest winter air conditioner is designed for *two-way economy*. The **NEW 550** combines low initial cost with high operating efficiency — delivers the care-free comfort home owners want at a price most anyone can afford. Since it's built by Thatcher, home owners get the kind of trouble-free heating Thatcher's been famous for since 1850. That's why the **NEW 550** is a real profit builder. Investigate its possibilities today.



## **HERE** are 8 reasons why thatcher's new 550 is easier to sell

- Heavy Gauge welded Body and Economizer — provide generous heating surfaces which deliver more heat from less fuel.
- Tailor-Made Burned Refractory Combustion Chamber — pre-burned for longer life — assembly foolproof.
- Flange Mounted Oil Burner — burner and nozzle locked in correct relationship with combustion chamber for highest efficiency.
- Top Quality Thatcher Oil Burner — compact design, standard parts, roomy utility area for servicing ease, serviced without changing air adjustment.
- Large Replaceable Filter — 20" x 25" approved type, easy to clean — inexpensive to replace.
- Oversized Blower — ball bearings, resiliently mounted for quiet operation — longer life, adjustable motor pulley adds flexibility.
- Modern Natural Aluminum Casing — easy to clean.
- Performs In Accordance With National Warm Air Standards.



**GARWOOD NEW JERSEY**



Comfortmaster  
Oil-Fired  
Air Conditioner



Comfortmaster  
Gas-Fired  
Air Conditioner



Triple-Fire  
All-Purpose  
Boiler



Oilmaster  
Automatic  
Oil-Fired Boiler



Thermaster  
Gravity  
Furnace

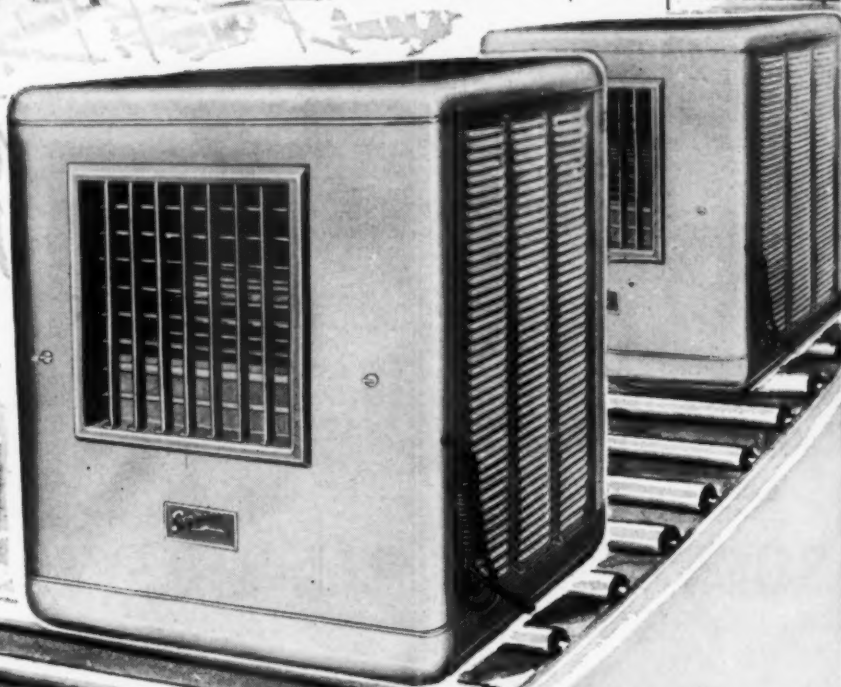


*Dedicated To More Comfortable Living*

**HERE THEY COME!  
THE NEW 1948**

# **SNO-BREZE**

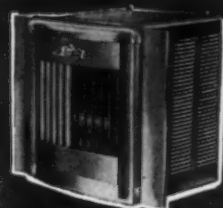
**EVAPORATIVE  
COOLERS**



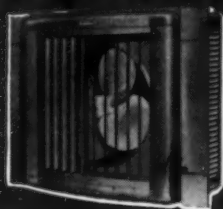
RESIDENTIAL BLOWER MODEL



SUPER BLOWER MODEL



WINDOW BLOWER MODEL



WINDOW FAN MODEL

**BY FAR,** America's most acceptable  
evaporative cooler for outstanding efficiency,  
superb quality and economic operation.

*Palmer*  
MANUFACTURING CORP.  
Phoenix, Arizona, Dept. A-4

Please send free Sno-Breze literature to:

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Address.....

City..... Zone..... State.....

**39 Years of Air Conditioning Leadership**



## GOOD SOLDER, AND ALL THIS TOO!

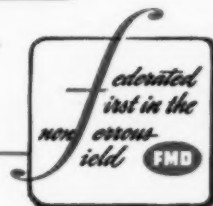
In Federated solder you get the exact metal you specify, PLUS all these intangible ingredients. These background factors mean service and security...they mean that you get *consistently* better solder to help you do a *consistently* better job.

For any size, form, or composition of solder—bar, pig, body, drop, foil

and ingot; acid core, rosin core and solid wire; triangle, strip, wiping and segment — see Federated first.

**Federated**  
METALS DIVISION

AMERICAN SMELTING AND  
REFINING COMPANY  
120 BROADWAY, NEW YORK 5, N. Y.









rch, 1948



**YOUR CUSTOMERS  
ALWAYS COME BACK  
... WHEN YOU SELL  
WITH A·B·C**



LIKE a good homing pigeon, your ABC customers come back to you. For repeat sales are the rule when you use the instalment note services of Allied Building Credits, Inc. One firm has made TEN ABC "repeat sales" to the same customer, four or five are not unusual.

Why do ABC customers come back to you? Because it's easy to buy from you. "No cash down, monthly payments to suit income."

They like the convenience of buying this way, without going elsewhere to arrange a loan or credit. If after one ABC purchase they apply directly to ABC for credit on another job, what happens? They are politely refused! And sent to you to arrange ABC credit. You make another ABC sale.

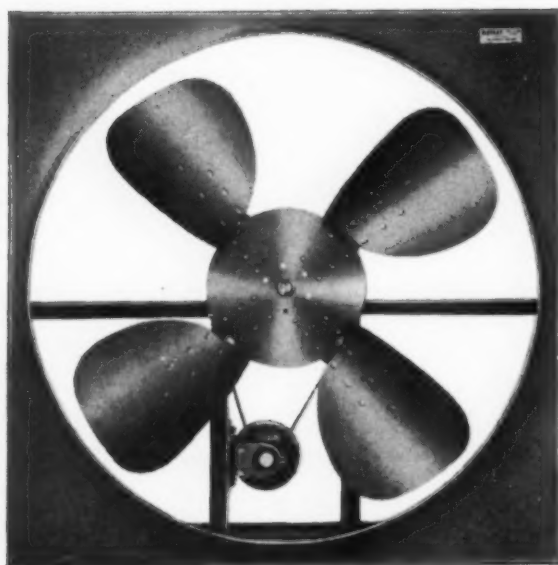
Yes, when you sell with ABC, your customers always come back to you.



**ALLIED BUILDING CREDITS, INC.**  
DEPT. A, 3109 WILSHIRE BLVD. LOS ANGELES 5, CALIF.  
Complete Instalment Note Services for the Building Industry  
NATIONWIDE SERVICES; OFFICES IN PRINCIPAL CITIES.

**YOU AND YOUR CUSTOMERS  
CAN DEPEND ON**

## **MURRAY ATTIC FANS**

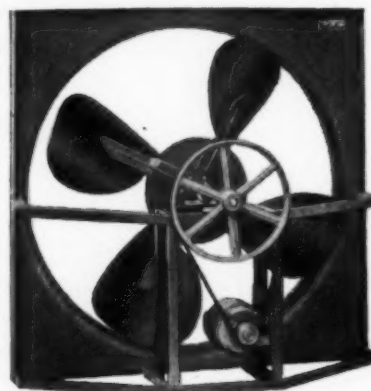


Murray Attic Fans are manufactured in our own plants under rigidly controlled manufacturing processes. Only tested, quality materials and skilled labor are used in making Murray Attic Fans. Murray Attic Fans provide maximum ventilation and steady air flow with minimum sound. Scientifically designed, Murray Attic Fans are engineered to perform efficiently at low operating cost. Every Murray Attic Fan is guaranteed against defects in materials and workmanship. You and your customers can depend on Murray Attic Fans — *the fan that does its work in a Whisper.*

### *To Help Increase Your Sales*

**SUCTION BOX AND GRILL PACKAGE:** Specially designed Murray Suction Box complete with Grill and everything else you need for most fan installations. A unit package available in three standard sizes.

**MURRAY SALES INCREASERS KIT:** Includes Installation Manual, Newspaper Mats, Consumer Folders, Radio Announcements, Suggestions for increasing your sales — all pre-tested sales material available free to Murray Attic Fan dealers.



*"The Fan  
that does its work  
in a Whisper"*

For complete information, see your jobber, or write direct to

# **THE MURRAY COMPANY**

**ATLANTA, GEORGIA**

**Established in 1900**

**DALLAS, TEXAS**



# NEW RADIANT PANEL SYSTEM LOWERS CONSTRUCTION AND HEATING COSTS FOR SINGLE FLOOR-PLAN HOUSES

One of 80 three-bedroom houses of the Kew Garden project designed by Mellenbrook, Foley & Scott and built at Berea, Ohio, suburb of Cleveland, by Taft and Blackman.

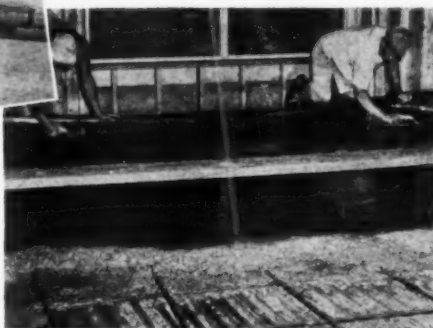


Typical floor plan; note location of the compact Janitrol Winter Air Conditioner in the combination kitchen-utility room.



Beginning of floor construction, two tiers of bricks are laid on concrete slab to form heat distribution ducts 5½" deep.

Pouring concrete over corrugated sheet steel above the duct tiers on which reinforcing bars are supported.



● There's no guesswork about the results of these 80 warm air radiant heating installations, for many of these homes have been occupied for more than a year.

The system which employs a Janitrol Winter Air Conditioner, works beautifully and the home owners are immensely enthusiastic.

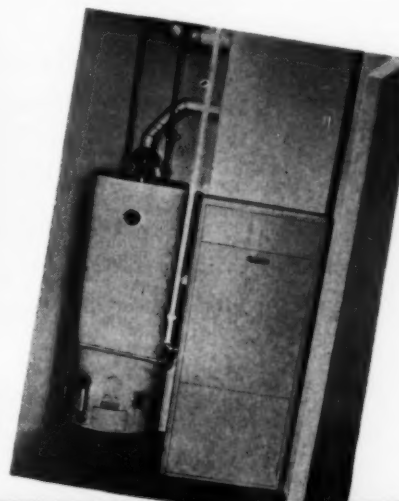
All of the floor area, except the garage, of these one floor type houses is radiant panel heated. The Janitrol gas-fired 105,000 Btu Winter Air Conditioner is located in the combination kitchen-utility room. See floor plan at the left.

In addition to the solid com-

fort supplied by quiet, automatic Janitrol heat, installation of the unit and house construction costs were materially lowered by the unique heat distribution system.

Forced warm air is first conducted upward to the attic and then distributed by stacks located in the walls to the under-floor duct system. Special care was given in the duct design to minimize any resistance to air flow.

A more complete description of the construction and operating details of this money-saving, modern heating system is available upon request. Write for the "Kew Gardens Story" and learn how Janitrol can help you sell better home comfort at lower cost



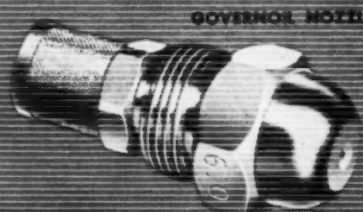
Extremely compact, this 105,000 Btu Janitrol Winter Air Conditioner requires a floor space of less than 22" x 22".

# Janitrol

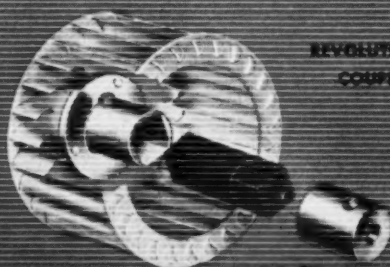
SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO



## KLEEN-HEET MODEL 77

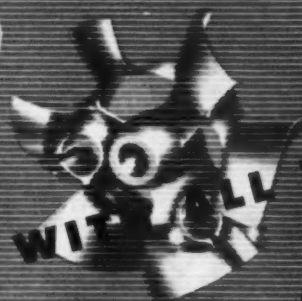


GOVERNOR NOZZLE

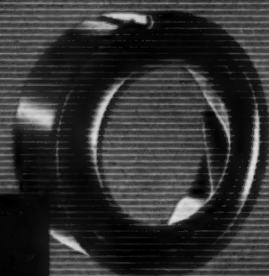


REVOLUTIONARY  
COUPLING

EXCLUSIVE SPINNER



IMPROVED CHORE



THE OIL BURNER WITH ALL THE FEATURES

**ONE MODEL HANDLES  
FROM 0.6 TO 6.0 GPH !!!**

Yes—Kleen-Heet is actually America's most "flexible" Oil Burner. It's one of the few oil burners listed by the Underwriters' Laboratories that has this wide range. Just think! One Model can handle any job from bungalow to mansion. Little stock and storage problem—no original large order necessary because one model can handle most any job in the domestic oil burner field. Besides this—they're easy to install—and service is at a minimum. Just ask any KLEEN-HEET Service man—he'll tell you.

*It'll pay you to write today for details to*

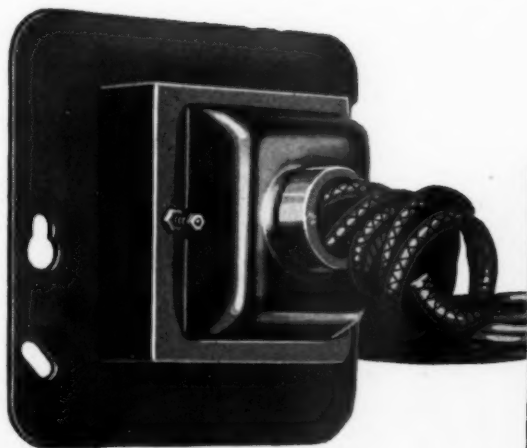
***Kleen-Heet* INCORPORATED**

1829 CARROL AVENUE

CHICAGO 12 • ILLINOIS

*"Since 1919 . . . America's Most Luxurious Oil Heat"*

# T-23 OIL HEATING PACKAGE SET

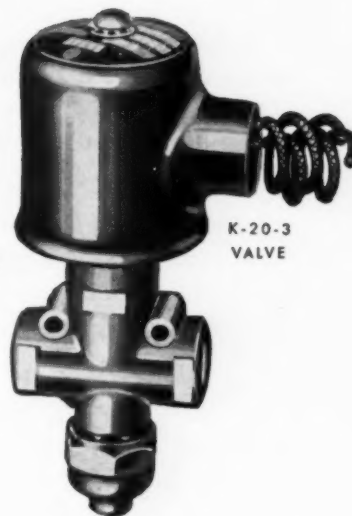


T-O TRANSFORMER



T-770 THERMOSTAT

THERMO.  
CABLE



K-20-3  
VALVE

*Automatically Yours For Better Temperature Control*



**GENERAL**

801 ALLEN AVENUE

**CONTROLS**

GLENDALE 1, CALIF.

FACTORY BRANCHES: BIRMINGHAM (3), BOSTON (16), CHICAGO (5), CLEVELAND (15), DALLAS (2), DENVER (10), DETROIT (8), HOUSTON (2), KANSAS CITY (2), NEW YORK (17), PHILADELPHIA (40), PITTSBURGH (22), SAN FRANCISCO (7), SEATTLE (1) • DISTRIBUTORS IN PRINCIPAL CITIES

WRITE FOR FREE DESCRIPTIVE LITERATURE



# When OHI wore knickers...



## OHIO pioneered the oil burner motor of today.

Time is the test of ideas, men and materials.  
Anniversaries pay tribute to success.

As a member of Oil-Heat Institute of America, Ohio Electric designed and built in 1924 *the first flange-type oil burner motor*. Its universal use and acceptance today records the importance of that pioneering vision.

We cannot say exactly how many Ohio Motors are in use today. Estimates from time to time, however, have fixed the percentage of domestic burners powered by Ohio at 30%.

Words like "dependable"... "quiet"... "accessible" have often described this leading motor. But for a real description, ask the oil burner manufacturers who use them... the dealers who sell them... the home owners who have them.

*Their word is better than ours.*

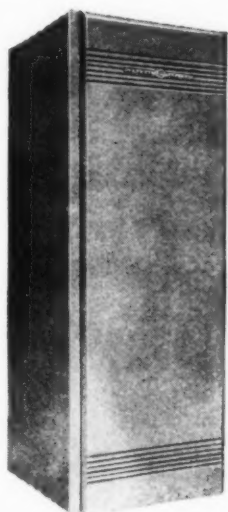


**THE OHIO ELECTRIC MFG. CO.**  
5918 MAURICE AVE. • CLEVELAND 4, OHIO

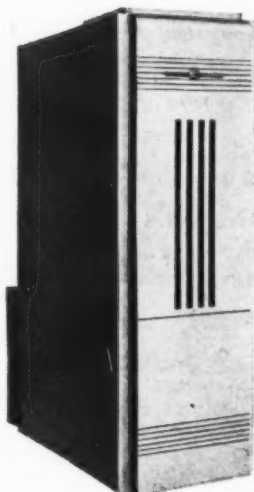
Visit Us at the Chicago Exposition, Booth No. 214-216



# *The Finest Advertisement you can have*



**The G-E Oil-Fired  
Warm Air Furnace**



**The G-E Gas-Fired  
Warm Air Furnace**

A CUSTOMER bragging to his friends about the General Electric gas or oil furnace you installed is just about the finest advertisement you could hope for.

And who wouldn't be pleased with these economical, space-saving warm air jobs? They're engineered for compactness . . . these units are approved for close-quarter and alcove installations with only 2-inch clearance from walls of standard construction.

## **30 minutes to install**

Just about one-half hour . . . that's all it takes to slip these G-E furnaces into place, ready for action where duct, fuel, and power lines have been prepared. That's because both gas and oil furnaces have been assembled, wired, and tested at the G-E factory . . . all set to go! Just compare G-E installation savings with the cost of putting in units that must be assembled on the job.

The General Electric name for reliability . . . plus the fuel-saving, space-saving features of these fine furnaces makes your *selling* job easier. Their flexibility and simplicity make your *installation* job easier. Get full information today from your G-E Distributor. *General Electric Company, Air Conditioning Dept., Section H8193, Bloomfield, N. J.*

**GENERAL  ELECTRIC**  
***Oil and Gas Warm Air Heating***



# From the cradle to

**HERMAN NELSON PRODUCTS  
SERVE MILLIONS IN AMERICA**



General Office and Warehouse Building, Brunswick Drug Co., Vernon, Calif.  
Architects—Albert C. Martin and Associates, Los Angeles. Mechanical Engineer—Lester R. Kelly, Los Angeles. General Contractor—Wm. Simpson Construction Co., Los Angeles. Plumbing & Heating Contractor—Howe Bros., Los Angeles. Ventilating & Air Conditioning Contractor—W. S. Kilpatrick & Co., Los Angeles.

Comfortable and healthy air conditions are maintained for customers and employees alike in thousands of offices and stores across the country, through the use of Herman Nelson Heating and Ventilating Products.

Because the average man spends about 80 per cent of his entire lifetime indoors, it is important that all buildings in which he goes to school, works and plays be properly heated and ventilated.

For over 40 years, The Herman Nelson Corporation has been building quality heating and ventilating equipment for public, industrial and commercial buildings. Leading Architects, Engineers and Contractors, as well as Owners, know that the use of Herman Nelson Products will assure maintenance of desired air conditions.



**THE HERMAN NELSON CORPORATION**  
Since 1906 manufacturers of quality heating and ventilating products  
**MOLINE, ILLINOIS**

**Her**

Baltimore

Boston

Chicago

Cincinnati

Cleveland

Detroit

Milwaukee

Minneapolis

**Her**

Atlanta

Buffalo

Cape Elizabeth

Columbus

Dallas

Denver

Des Moines

Duluth

Grand Rapids

Greensboro

Houston

Indianapolis

Jackson

Kansas City

Louisville

Los Angeles

**Her**

ARKANSAS

Bruce

CALIFORNIA

Crane

Dallman

San Francisco

Industrial

Taylor

San Jose

Rosa

CONNECTICUT

Hansen

Marsden

Hartford

DELAWARE

Hajoca

FLORIDA

Hajoca

Jacks

GEORGIA

Electric

Hajoca

Columbus

ILLINOIS

E. Best

Quincy

Fox Elm

Hoe Super

Inland

Inland

Danville

Mott B

Yelton

Spring

INDIANA

Baker Sp

Logan

Industrial

Knapp

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Evans

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Cedar

Ewing

Globe M

Des Moines

Wigman

KANSAS

The Salt

The Tho

Leaver

The Top

Inc.,

U. S. S

KENTUCKY

Brock-M

Hoe Sup

MAINE

W. L. B

Carmen

R. B. D

Hall & I

Lewis

Palmer



# to the grave...

## Herman Nelson Branch Offices

Baltimore—F. M. Hewitt, Product Application Engineer.  
 Boston—W. N. Murray, Mgr., R. M. Burbank, Product Application Engineer.  
 Chicago—C. A. Pickett, Mgr., J. C. Donaldson, L. C. Ward, Product Application Engineers.  
 Cincinnati—W. J. Killian, Product Application Engineer.  
 Cleveland—Frank B. Johnston, Jr., Mgr., W. B. Polhemus, Product Application Engineer.  
 Detroit—Charles W. Trambauer, Mgr., Robert G. Keller, Product Application Engineer.  
 Milwaukee—Carl H. Amundson, Product Application Engineer.  
 Minneapolis—Anthony Spoodis, Mgr., Carl H. Johnson, Jr., Product Application Engineer.

Moline—Frank T. Tyler, Mgr.  
 New York—Bruce P. Hyde, Mgr., Donald F. Moran, Product Application Engineer.  
 Philadelphia—P. A. Cavanagh, Mgr., W. Donald Strause, Product Application Engineer.  
 Pittsburgh—G. M. Heslop, Mgr., Charles R. Holsclaw, Product Application Engineer.  
 St. Louis—Harold C. Gerboth, Mgr., E. Paul Harder, Product Application Engineer.  
 Springfield, Mass.—Philip A. Boulton, Product Application Engineer.  
 Syracuse—C. R. Anderson, Product Application Engineer.  
 Washington, D. C.—J. M. Osborne, Mgr.

## Herman Nelson Product Application Engineers

Atlanta, Ga.—Felix J. Commagere.  
 Buffalo, N. Y.—Edward H. Cox.  
 Cape Elizabeth, Me.—The Partridge Co.  
 Columbus, Ohio—Russell H. Smith Equipment Co.  
 Dallas, Tex.—W. E. Lewis & Co.  
 Denver, Colo.—Appleton Engineering.  
 Des Moines, Iowa—Products, Inc.  
 Duluth, Minn.—Williams-Swanson Co.  
 Grand Rapids, Mich.—Marshall & Wells Co.  
 Greensboro, N. C.—R. K. Hunter & Co.  
 Houston, Tex.—D. R. Rippey.  
 Indianapolis, Ind.—G. Heidenreich Co., Inc.  
 Jackson, Miss.—H. M. Ludlow.  
 Kansas City, Mo.—H. H. Wright Co.  
 Louisville, Ky.—John Zimmermann.  
 Los Angeles, Calif.—F. J. Hearty & Co.

Memphis, Tenn.—Southern Sales Co.  
 Miami, Fla.—R. P. Kelley.  
 Missoula, Mont.—W. M. Walterskirchen Co.  
 Nashville, Tenn.—Southern Sales Co.  
 New Orleans, La.—Cressy Sales Co.  
 Oklahoma City, Okla.—O. T. Carroll.  
 Omaha, Neb.—Verne Simmonds.  
 Phoenix, Ariz.—Alfred C. Baechlin.  
 Portland, Ore.—T. C. Langdon Co.  
 Richmond, Va.—W. Wallace Neale.  
 Saginaw, Mich.—W. A. Witheridge Co.  
 Salt Lake City, Utah—Midgley-Huber.  
 San Antonio, Tex.—D. R. Rippey.  
 San Francisco, Calif.—E. C. Cooley Co.  
 Seattle, Wash.—E. H. Langdon Co.  
 Spokane, Wash.—R. L. Nelson.

## Herman Nelson Distributors

**ARKANSAS**  
 Bruce-Rogers Co., Fort Smith.  
**CALIFORNIA**  
 Crane Company, San Bernardino.  
 Dallman Supply Co.,  
 San Francisco, Sacramento.  
 Industries Supply Co., San Diego.  
 Tay-Holbrook, Inc.,  
 San Francisco, Berkeley, Fresno, San Jose, Sacramento, Stockton, Santa Rosa.  
**CONNECTICUT**  
 Hansen Supply Co., New London.  
 Marsden & Wasserman, Inc.,  
 Hartford.  
**DELAWARE**  
 Hajoca Corporation, Wilmington.  
**FLORIDA**  
 Hajoca Corporation,  
 Jacksonville, Tampa.  
**GEORGIA**  
 Electric Supply Co., Atlanta.  
 Hajoca Corporation,  
 Columbus, Savannah.  
**ILLINOIS**  
 E. Best Plbg. & Htg. Supply Co.,  
 Quincy.  
 Fox Electric Supply Co., Elgin.  
 Hoe Supply Co., Christopher.  
 Inland-Perola Supply Co., Peoria.  
 Inland Supply Co., Champaign,  
 Danville, Elgin, Joliet.  
 Mott Brothers Co., Rockford.  
 Yelton-Weaver Supply Co.,  
 Springfield.  
**INDIANA**  
 Baker Specialty and Supply Co., Inc.,  
 Logansport.  
 Industrial Supply Co., Terre Haute.  
 Knapp Supply Co., Muncie.  
 Plumbing & Industrial Supply Co.,  
 Evansville.  
**IOWA**  
 Cedar Rapids Pump & Supply Co.,  
 Cedar Rapids.  
 Ewinger Supply Co., Burlington.  
 Globe Machinery & Supply Co.,  
 Des Moines, Cedar Rapids.  
 Wigman Company, Sioux City.  
**KANSAS**  
 The Salina Supply Co., Salina.  
 The Tholen Bros. Supply Co.,  
 Leavenworth.  
 The Topeka Steam Boiler Works Co.,  
 Inc., Topeka.  
 U. S. Supply Co., Wichita.  
**KENTUCKY**  
 Brock-McVey Co., Inc., Lexington.  
 Hoe Supply Co., Paducah.  
**MAINE**  
 W. L. Blake & Co., Portland.  
 Carman-Thompson Co., Lewiston.  
 R. B. Dunning & Co., Bangor.  
 Hall & Knight Hardware Co.,  
 Lewiston.  
 Palmer Supply Co., Portland.

**MARYLAND**  
 Frederick Trading Co., Frederick.  
 Shore Distributors, Salisbury.  
 Western Maryland Supply Corp.,  
 Hagerstown.  
**MASSACHUSETTS**  
 Babbitt Steam Specialty Co.,  
 New Bedford.  
 Corcoran Supply Co., Brockton.  
 Corcoran Supply Co., Hyannis.  
 Holyoke Supply Co., Inc., Holyoke.  
 Charles Millar & Son Co., Springfield.  
 Washburn-Garfield Co., Worcester.  
**MICHIGAN**  
 Bond Supply Co.,  
 Kalamazoo, Battle Creek.  
 Brammall Supply Co.,  
 Benton Harbor.  
 The Link Company, Jackson.  
 Michigan Supply Co., Lansing.  
**MINNESOTA**  
 Marshall-Weils Co., Duluth.  
**MISSOURI**  
 Harry Cooper Supply Co.,  
 Springfield.  
 Missouri Water & Steam Supply  
 Co., St. Joseph.  
 U. S. Supply Co., Kansas City.  
**NEBRASKA**  
 U. S. Supply Co., Omaha.  
**NEVADA**  
 J. R. Bradley Co., Reno.  
**NEW HAMPSHIRE**  
 Palmer Plumbing Supply Co.,  
 Laconia, Rochester.  
 George E. Trudel Co., Manchester.  
**NEW JERSEY**  
 Hajoca Corporation, Bridgeton,  
 Camden.  
 Manufacturers Selling Co., Trenton.  
**NEW YORK**  
 W. A. Case & Son Mfg. Co.,  
 Jamestown.  
 John B. Davie Co., Inc., Rochester.  
 J. D. Johnson Co., Inc.,  
 Poughkeepsie.  
 LeValley, McLeod, Kinkaid Co. Inc.,  
 Elmira, Schenectady, Olean.  
 Charles Millar & Son Co.,  
 Utica, Binghamton.  
**NORTH CAROLINA**  
 Hajoca Corporation,  
 Charlotte, Asheville.  
 Kester Machinery Co.,  
 Winston-Salem, High Point,  
 Burlington.  
**OHIO**  
 The Hardware & Supply Co.,  
 Massillon.  
 Heating Trades Supplies, Inc.,  
 Toledo.  
 The Hughes Supply Co., Mansfield.  
 The W. H. Kiefaber Co.,  
 Dayton, Hamilton.  
 The Roedel Co., Zanesville.

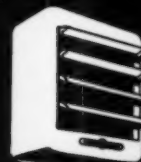
Strong, Carlisle & Hammond Co.,  
 Cleveland.  
**OKLAHOMA**  
 Cooper Supply Co., Tulsa.  
 U. S. Supply Co.,  
 Oklahoma City.  
**OREGON**  
 Johnson Heating Supply Co.,  
 Portland.  
**PENNSYLVANIA**  
 Bailey-Farrell Co., Pittsburgh.  
 Busser Supply Co., Lewisburg.  
 Careva Company, York.  
 W. A. Case & Son Mfg. Co., Erie.  
 Hajoca Corporation, Chester, Hazleton, Lansdale, Lansdowne, Lewis-ton, Norristown, Reading, Wilkes-Barre.  
 E. Keefer Company, Williamsport.  
 Lehigh Valley Supply Co., Allentown, Easton, East Stroudsburg, Lansdale.  
 Swank Hardware Co., Johnstown.  
**RHODE ISLAND**  
 International Supply Co., Providence.  
**TEXAS**  
 Calcasieu Lumber Co., Austin.  
 East Texas Plumbing & Supply Co.,  
 Longview.  
 Electric Supply Co., Galveston.  
 Morrison Supply Co.,  
 Fort Worth, Sweetwater, Wichita Falls, Amarillo, Lubbock, Odessa.  
 San Antonio Machine & Supply Co.,  
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 Southern Equipment Co.,  
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 Southland Supply Co.,  
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**VERMONT**  
 Canney-Plus, Inc., Rutland.  
 Charles Millar & Son Co.,  
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**VIRGINIA**  
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 Richmond, Norfolk, Danville,  
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 Western Maryland Supply Corp.,  
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**WASHINGTON**  
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**WEST VIRGINIA**  
 W. M. Johnson, Huntington.  
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 The Universal Supply Co.,  
 Parkersburg.  
**WISCONSIN**  
 Cordes Supply Co., Milwaukee.  
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 Murphy Supply Co., Green Bay.  
 Wisconsin River Supply Co.,  
 Wausau.



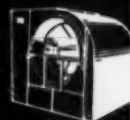
Herman Nelson  
Direct Drive  
Propeller Fans



Herman Nelson  
Belt Drive  
Propeller Fans



Herman Nelson Horizontal  
Shaft Propeller-Fan  
Type Unit Heaters



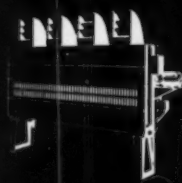
Herman Nelson  
Type H  
Centrifugal Fans



Herman Nelson Vertical  
Shaft Propeller-Fan  
Type Unit Heaters



Herman Nelson  
Type H8  
Centrifugal Fans



Herman Nelson  
Blower-Fan Type  
Unit Heaters



Herman Nelson  
De Luxe Unit Heaters



Herman Nelson  
Unit Ventilators



Herman Nelson  
Belt Drive  
Unit Blowers



Herman Nelson  
Direct Drive  
Unit Blowers



# DOWAGIAC

*will*  
*Keep You in Business!*

**Y**ou know it's true—in recent years anybody could do business with any kind of merchandise. Good merchandise has been scarce because holding true to high standards of quality and manufacture hasn't been easy. But Dowagiac has held fast. So, more and more dealers are turning to Dowagiac Steel Furnace Company products for all fuels—coal, oil, gas, electricity—because they make up a line that will keep you in business.

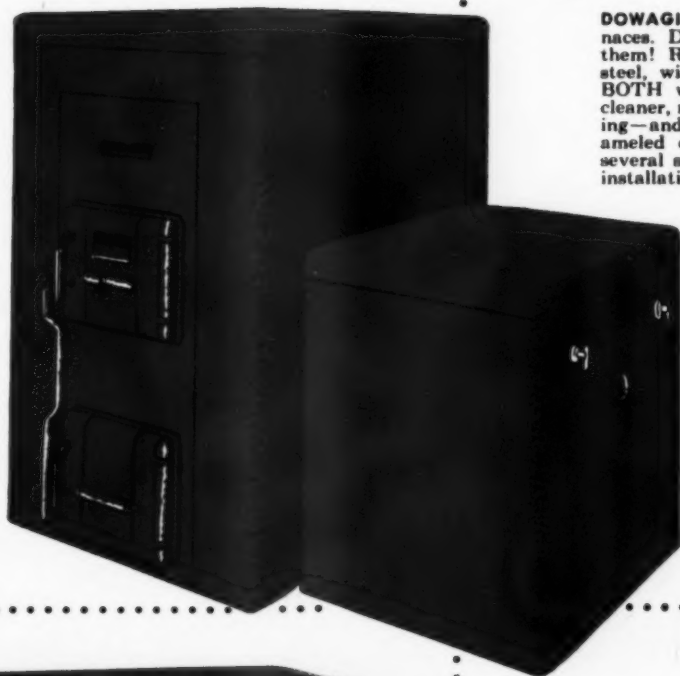
Write today for details about our plan—learn how you, too, can sell quality merchandise at a competitive price.



**DOWAGIAC MIGHTY MIDGET** Oil-Fired Winter Air Conditioner. Makes it easy for customers to say, "That's what we want!" Oil burner, furnace, blower, filters, all snugged into a cabinet superbly finished in blue Hammerloid enamel. Provides positive circulation. Three sizes. Widely known for lasting performance at low upkeep.

**DOWAGIAC**  
DOWAGIAC MICHIGAN

*Steel Furnace Company*

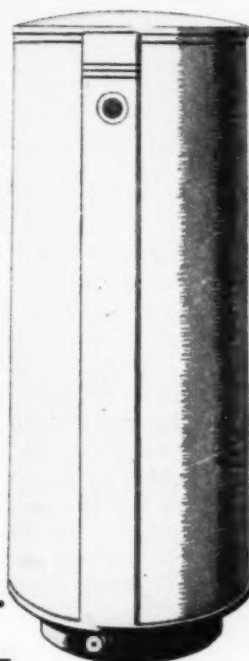


**DOWAGIAC COAL-FIRED Steel Furnaces.** Dowagiac's fame is founded on them! Ruggedly built of heavy-gauge steel, with a strength and safety of BOTH welding and riveting. Safer, cleaner, more economical, more enduring—and modern in square, blue-enameled cabinets for eye appeal. In several sizes for gravity or forced-air installation.

**DOWAGIAC Winter Air Conditioning Units.**



**DOWAGIAC ARROW Gas-Fired Winter Air Conditioner.** Here's high efficiency cased in sleek beauty! Compact gas unit famed for economy, dependability, durability. Housed in blue Hammerloid enamel-finished cabinet, pleasingly proportioned. In several sizes, all A. G. A. approved. Naturally it sells on sight!



**DOWAGIAC ELECTRIC Water Heater.** Sets new higher standards of construction! Water temperature always under accurate control. Engineered for consistent performance. Thickly walled with high-efficiency insulation against water-heat loss. Durable white baked enamel finish in 30, 40, 52, 66 gallon sizes. "Underwriters" approved.



**DOWAGIAC OIL-BURNING Water Heater.** Install it and both you and the customer can forget it! Years-long service with practically no attention—that's the story we get from dealer after dealer about this modern appliance. Sizes from 20 to 65 gallons, finished in either blue or white baked enamel. "Underwriters" approved.



# DUCTS HAVE THAT "NEW LOOK"



## when made from REYNOLDS ALUMINUM

plus other New Advantages worth looking into

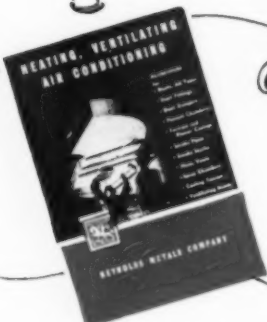
If you've used Reynolds Lifetime Aluminum for duct work, then you are aware of its better workability and faster fabrication. You know, too, that Reynolds Aluminum Utility Sheet offers three times more metal surface per pound than conventional materials. Easy handling on the job offers you another big economy.

Because aluminum is rustproof and has a naturally attractive finish—a "new look" that stays new-looking—you save on painting costs. Your regular equipment such as Pittsburgh lock tools and shears will handle this metal faster with less tool wear. From any standpoint you are wise to use Reynolds Aluminum in every job of duct work.

You get customers' approval, too. The quality of the installation gives a boost to your business reputation . . . sound-deadening and efficiency advantages in heating, plus lifetime service, is a real break for the buyer. Your customers will thank you for the added assurance of trouble-free service . . . no rusting out and no repainting.

Don't be stuck with old-fashioned ideas about metal while your competition forges ahead with modern aluminum duct work.

Delivery service is handy . . . ask local Reynolds Aluminum jobbers about structural angles and rivets as well as aluminum sheet. Reynolds Metals Company, 2034 South Third Street, Louisville 1, Kentucky.



### WRITE!

*You can have a free copy of this helpful booklet on aluminum at work in the heating and ventilating business—brief, complete and illustrated.*

# REYNOLDS

*Lifetime* **ALUMINUM**



# *The New* **WILLIAMSON** ALL-FUEL FURNACES

## BURN OIL • GAS • COAL

Hundreds of Warm Air Heating dealers now recognize the tremendous advantage of Williamson All-Fuel Furnaces. They have not only met the immediate fuel emergency but the Good-Will of their customers has, as evidenced by their expressions of appreciation, grown by leaps and bounds.

The real "proof of the pudding" comes when actual fuel shortage leaves a home cold. Then the fundamental advantage of having a heating plant in which you can burn any fuel becomes obvious... and convincing. And it is but a matter of a few hours to "switch" to whatever fuel is available.

The Williamson Tripl-life Line, for gravity or forced air is unequalled in quality, capacity and appearance. The Flo-Warm Winter Air Conditioning Unit is by far the most beautiful unit in today's market. No visible bolts or screw heads, the Cabinet is

assembled with air-tight "S" hook construction. Big blower and filter capacity insure delivery of abundant clean, warm air. Equally efficient for Oil, Gas or Coal and **GUARANTEED FOR 20 YEARS**, the Tripl-life is a long-term investment for Home Comfort.



**THE WILLIAMSON HEATER COMPANY**  
AN OHIO CORPORATION SINCE 1890

*Hereby Guarantees*

For a period of twenty years from date, to furnish, free of charge, F.O.B. factory

**New Castings**

For this furnace, should any or all give out or burn out for any reason, except for deliberate abuse. This guaranty applies only to furnaces bearing the

**WILLIAMSON TRADEMARK**

And is effective only when the furnace is installed within our rated capacity and with adequate return air supply.

**THE WILLIAMSON HEATER COMPANY**

*Wm. Heath*  
President

SEAL

Oil-fired

Gas-fired

Stoker-fired

*The New*

# **WILLIAMSON**

**ALL-FUEL FURNACES**

**BURN OIL • GAS • COAL**

Find out for yourself. Get the facts about the Williamson Line. It includes Gravity and Forced Air in three lines: Triplife Chrome Iron, Standard Cast Iron and the Williamson Super-steel Furnaces. Sizes in each line to meet every need—prices to meet every budget.

Williamson "All-Fuel" Furnaces open up the

entire range of fuels — Oil - Gas - Stoker and Hand-fired.

Williamson Pipe and Fittings for Gravity and Forced Air, Registers and Faces give you everything you need from one source. If you are not acquainted with the Williamson Line—it will pay you to mail the coupon.

**THE WILLIAMSON HEATER COMPANY**

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*Get the facts - Mail this coupon Today*

**THE WILLIAMSON HEATER COMPANY**

**CINCINNATI 9, OHIO**

We would be interested in talking with your distributor

Name \_\_\_\_\_

Company \_\_\_\_\_

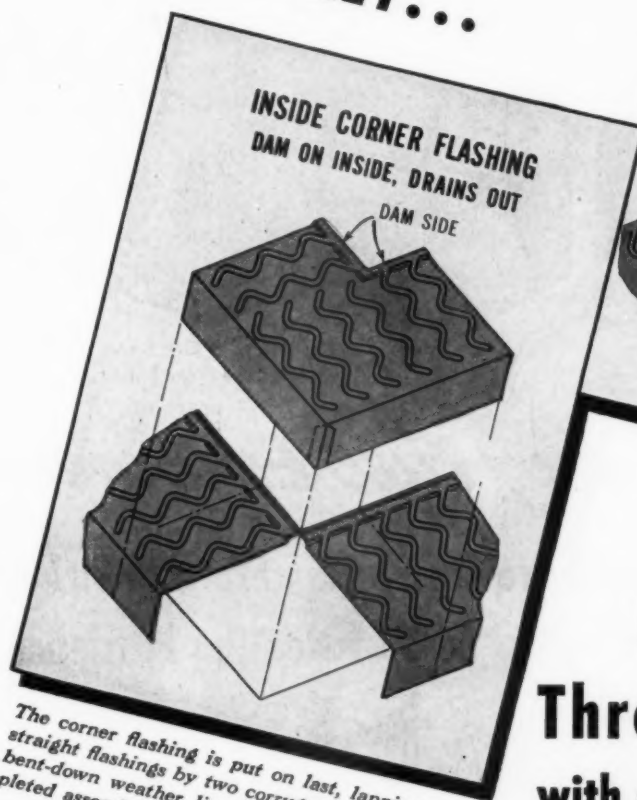
Address \_\_\_\_\_

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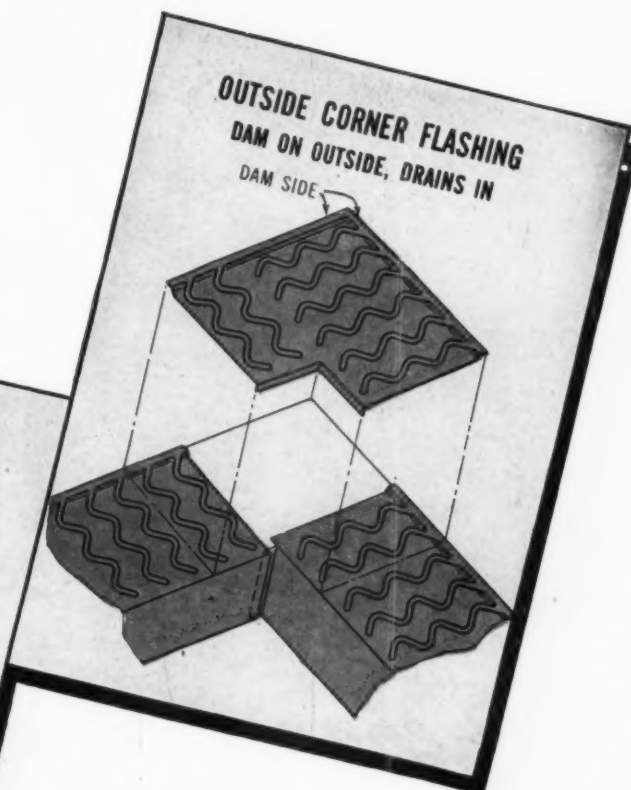
*No obligation*



# TO FLASH A CORNER QUICKLY...



The corner flashing is put on last, lapping the straight flashings by two corrugations. Note the bent-down weather lip which makes the completed assembly water-tight.



## Use ANACONDA Through-Wall Flashing with one-piece, inside and outside, corner flashings

**A**NACONDA THROUGH-WALL FLASHING is designed to provide positive drainage, a strong mortar bond and long-lived protection ... and also to make the sheet metal contractor's work as easy as possible.

This copper flashing that *drains itself dry* is carried in stock for 8- and 12-inch walls in five-foot and eight-foot straight lengths, together with corner pieces for both inside and outside drainage. These corner pieces are so designed that the corrugations interlock with those of the adjoining straight sections, providing the same thorough drainage, watertight joints and firm mortar bond at the corners as in the main part of the wall. The flat selvage on both straight lengths and corner pieces is an aid in

making neat, sharp bends for counter flashing or for locking to adjacent metal.

For detailed information on Anaconda Through-Wall Flashing, see our catalog in Sweets.

4701



### Anaconda

**C O P P E R**

**THE AMERICAN BRASS COMPANY**

General Offices: Waterbury 88, Connecticut  
Subsidiary of Anaconda Copper Mining Company  
In Canada: ANACONDA AMERICAN BRASS LTD.,  
New Toronto, Ont.



*Rybolt Series 152*  
Cast Iron, Coal-Fired Winter Air Conditioner.



*Rybolt Series RH-76*  
Steel Coal-Fired Winter Air Conditioner.

## *Be Prepared for any Fuel Emergency*

**RYBOLT Coal-Fired Units are Easily Converted to Firing with Gas or Oil, with Little or No Loss of Heating Efficiency**



*Rybolt Cast Iron Gravity Furnace Gas-Fired*



*Rybolt Cast Iron Winter Air Conditioner Gas-Fired*

### *New RYBOLT Gas-Fired Units are also available!*

Where your customers have an adequate supply of gas, Rybolt gas-fired furnaces will meet every requirement of heating efficiency, convenience and economy. Unusually compact to conserve space, easy to install and service and thoroughly modern in design and finish, they represent Rybolt quality at its best. Approved by American Gas Association for use with natural, mixed or manufactured gas.

Rybolt coal-fired units, cast iron or steel, can easily and quickly be converted to firing with gas or oil, then back again to coal firing if emergency demands. This is a big selling advantage that gives you real protection in case of fuel shortages.

And these conversions can be made with little or no loss in heating efficiency. Rybolt units are correctly designed to burn all fuels efficiently because ample combustion space and adequate heating surfaces are provided.

The units illustrated above, Rybolt Series 152 and RH-76 primarily designed for hand firing, can also be adapted for stoker firing—another example of their versatility and adaptability to meet every requirement.

For utmost fuel protection, convenience, efficiency and economy, urge your customers to install Rybolt coal-fired heating units.



# THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

# PERFEX... FIRST WITH THE FINEST

*4 Point Control System*  
FOR ALL HAND-FIRED PLANTS

**NO OTHER  
METHOD HAS COMPLETE  
AUTOMATIC CONTROL**

The 4 Point Control System . . . originated, developed and pioneered by Perfex . . . is the only complete, coordinated system of automatic control for hand-fired heating.

It is the one and only system that gives complete control at these 4 vital points:

1. Complete Magic Dial Control of Room Temperature
2. Complete Protection against Fires Due to Overheating
3. Complete Control of Fuel Burning Rate
4. Complete Protection Against Heat Loss up Chimney

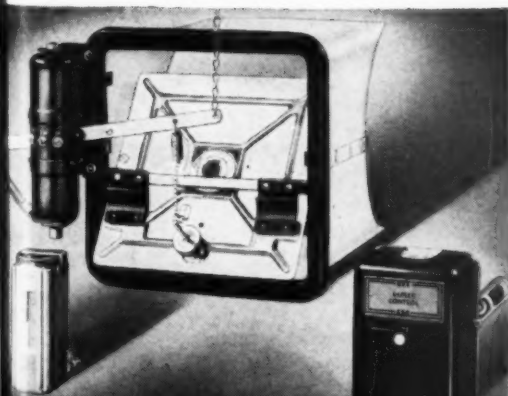
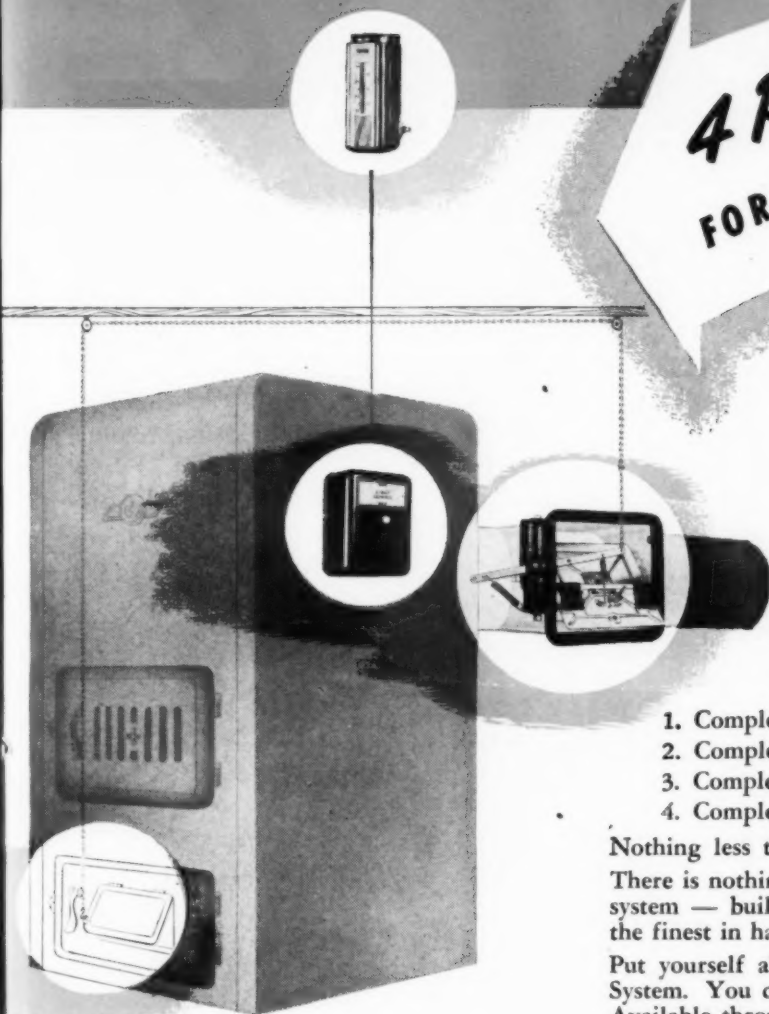
Nothing less than control at these 4 points does a complete job. There is nothing like it! Not an assembly of parts but a complete system — built by Perfex, synchronized and balanced to provide the finest in hand-fired heating control.

Put yourself ahead of competition. Feature the 4 Point Control System. You can sell it with profit . . . install it with confidence. Available through your heating equipment manufacturer. Get the facts. Write today.

PERFEX CORPORATION, MILWAUKEE 7, WIS. • Perfex Controls Ltd., Toronto 1, Ont.

 **PERFEX**  
*4 Point Control System*

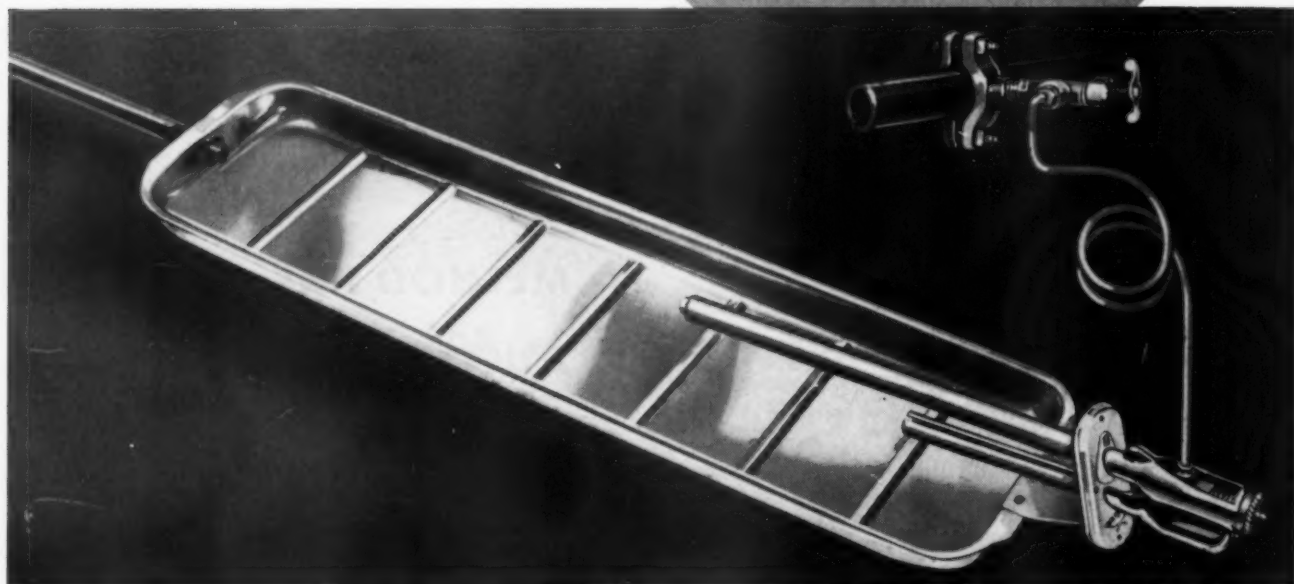
**ORDER YOUR NEW FURNACES AND BOILERS  
EQUIPPED WITH 4 POINT CONTROL SYSTEM**





*The Greatest  
Name In  
Humidifiers*

**THERMO-  
DRIP**



**PEAK EFFICIENCY AT LOWEST COST**

Thermo-Drip Humidifiers are first choice with furnace men the nation over... economical—efficient—durable—they give perfect balance of humidity and temperature at all times.

**BI-METAL THERMOSTAT**

Compact—no complicated parts—sturdy—gives years of trouble-free service. Requires no additional adjusting after installation.

**STAINLESS-STEEL PANS**

Long lasting—cannot rust or corrode—heat quicker—cause faster evaporation—give larger evaporating surface. Tailored to meet every humidifying need.

**EASY INSTALLATION**

Quickly attaches to any type or make of furnace. Manufactured for tailored fitting. All accessories included—nothing extra to buy.

Write today for complete catalogue, including prices and deliveries.

DEPT. A-348

**Automatic Humidifier Co.**  
CEDAR FALLS, IOWA



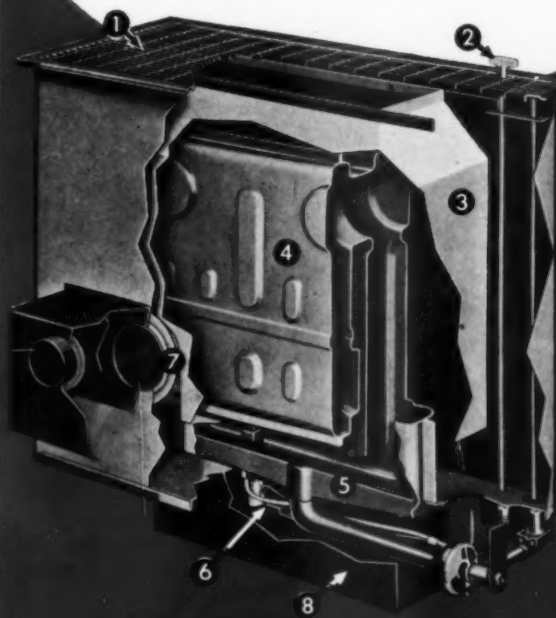
# self-seller

## FOR A BIG-TIME HEATING JOB

FITS BETWEEN STANDARD FLOOR JOISTS...

### THE BRYANT HEAT-CHAMBER

GAS-FIRED FLOOR FURNACE  
with Electric DIAL-LITE Ignition



For 1948 housing... the floor furnace with the features that will attract buyers in both new and replacement markets. Engineered for ease of installation and operation, the Heat-Chamber fits between standard floor joists, provides floor level access to ignition and control. Made in fully automatic or manual control models. Three sizes for natural, manufactured, LP or mixed gases.

1. Rigid, non-trip grille with pleasing, lasting finish.
2. Main and pilot burner controls readily accessible. Simply turn key to ignite and operate.
3. Single radiation shield, floating support.
4. Electric-welded, gastight combustion chamber, die formed for rigidity.
5. Raised, drilled port, cast iron, venturi type, high-efficiency burner.
6. Easy, safe Dial-Lite ignition with electric coil.
7. Sealed casing prevents dirt or insects from entering dwelling.
8. Scientifically designed burner pan prevents drafts blowing out burner.

  
**bryant**  
AUTOMATIC HEATING

BRYANT HEATER COMPANY - CLEVELAND, OHIO

# THIS **Automatic**

## FUEL-HANDLING **OILIFTER**

### **BOOSTS SALES ON ALL YOUR VAPORIZING OIL BURNING APPLIANCES**

Here's a welcome accessory . . . the A-P OILIFTER . . . that adds greater popularity to Oil Burning Appliances. It ends oil handling in the home, making fuel tank re-filling a convenient, safe, clean, completely automatic operation.

Easily connected to the oil control on ANY vaporizing burner appliance, the OILIFTER lifts oil from bulk storage tank to one or more appliances as high as the third story, or 100 feet away horizontally. Feeds oil in required amount day and night — with no attention beyond starting in the fall and stopping in the spring. Silent, self-starting motor operates without radio interference. Only a single 1/4" copper tubing is needed. Listed by UNDERWRITERS' LABORATORIES, INC.

Dealers! Take advantage of this opportunity for extra accessory sales volume! Recommend the OILIFTER as optional equipment on new appliance sales — and tell all your past customers about its benefits, too. You'll build greater enthusiasm for oil heating, increased satisfaction, good will — and greater profits.

**RETURN THE COUPON**  
for Complete Selling Materials.

#### **AUTOMATIC PRODUCTS COMPANY**

2452 North Thirty-Second Street, Milwaukee 10, Wisconsin

Please send us sales materials and prices on A-P OILIFTER and other A-P Automatic Control Accessories for Vaporizing Burner Appliances.

Name.....

Address.....

City.....State.....

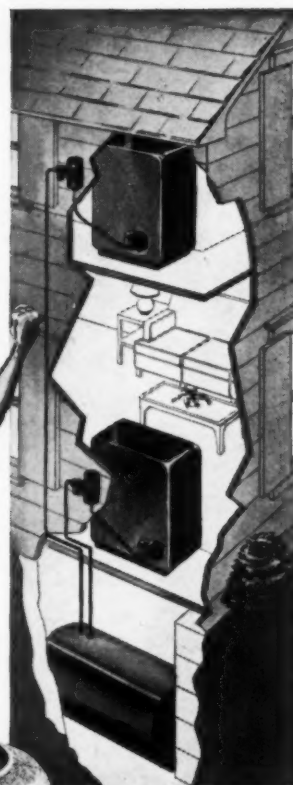
Alt. of.....

020A



**DEPENDABLE** *Oil Controls*

DESIGNED TO ELIMINATE SERVICING



A-P OILIFTER with integral filter unit. Can be installed on ANY vaporizing burner appliance requiring oil flow up to 1 1/4 gallons per hour.



AMERICAN-Standard *presents*

# A complete Set of Selling Tools to help you build a bigger, better business



NEVER before has any manufacturer in the heating field offered such extensive advertising and selling assistance. The enlarged American-Standard program for 1948 embraces not just national advertising . . . not just direct mail and point-of-sale literature . . . but all of the selling tools that any progressive Heating Contractor could possibly need to do a complete and lasting selling job!

With such backing, those who sell American-Standard Heating Equipment can face the competitive period ahead with enthusiastic optimism! Yes, you really get merchandising support—the kind that *brings in the business*—when you sell American-Standard. All of the selling tools in this advertisement are fully described in a new book, "Plan for Better Business." Ask your Wholesale Distributor for your copy now. American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

**YOU CAN'T MISS WITH SUPPORT LIKE THIS!**



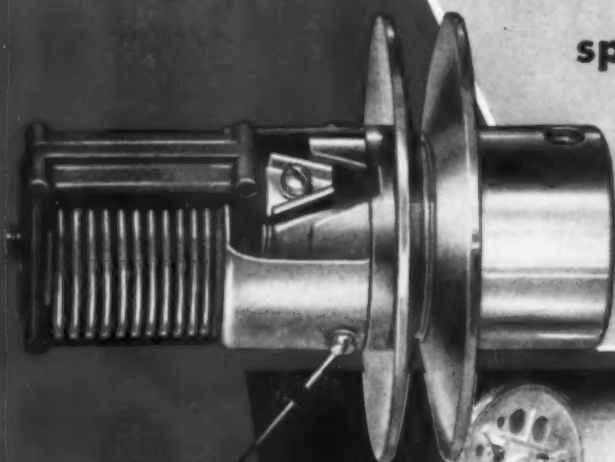
**AMERICAN-Standard**  
*First in Heating and Plumbing*

**LOOK FOR THIS MARK OF MERIT**—It identifies the world's largest line of Heating and Plumbing Products for every use . . . including Boilers, Warm Air Furnaces, Winter Air Conditioners, for all fuels—Water Heaters—Radiators, Convectors, Enclosures—Gas and Oil Burners—Heating Accessories—Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim—and specialized products for Hospitals, Hotels, Schools, Ships and Railroads.

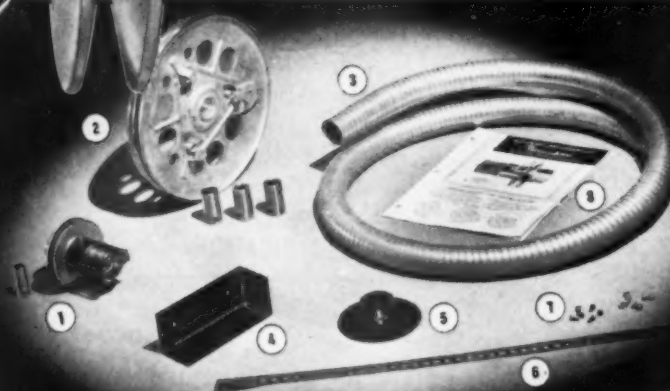
WEBSTER ELECTRIC

# Thermodrive kit now available

for easy conversion to variable  
speed blower operation  
in existing warm-air  
heating plants



*Thermodrive  
Can Be Used on  
Modern Forced-Air  
or Converted  
Gravity Feed  
Warm-Air Furnaces*



This new kit contains all necessary equipment for easy conversion of forced-air heating plants to controlled air circulation as developed by Webster Electric Company with the highly developed Thermodrive.

Thermodrive performance is in line with the principles of the C.A.C. program, as it provides continuous low-speed blower operation between burner cycles when required, and in addition gives increased circulation during periods of burner operation and increased bonnet temperatures. At all times, Thermodrive automatically controls the rate of circulation in exact coordination with heat output of the furnace.

The results of Thermodrive installation are more even room temperatures, more home comfort and greater heating efficiency.

Thermodrive can be easily installed with a very short period of shutdown, making it suitable to sell the year around.

## KIT CONSISTS OF...

1. Thermodrive Pulley
2. Tension Blower Pulley
3. Control Air Duct
4. Shroud
5. Mounting Flange
6. Hanger Iron
7. Bolts and Self-Tapping Screws
8. Installation Instruction Bulletin

WRITE FOR LITERATURE and  
SURVEY FORMS FOR  
PLANNING INSTALLATIONS

AT THE SHOW...VISIT OUR BOOTH NUMBER 205



**WEBSTER**  
RACINE



**ELECTRIC**  
WISCONSIN

Established 1909

Export Dept. 13 E. 40th Street, New York (16), N. Y. Cable Address "ARLAB" New York City

"Where Quality is a Responsibility and Fair Dealing an Obligation"

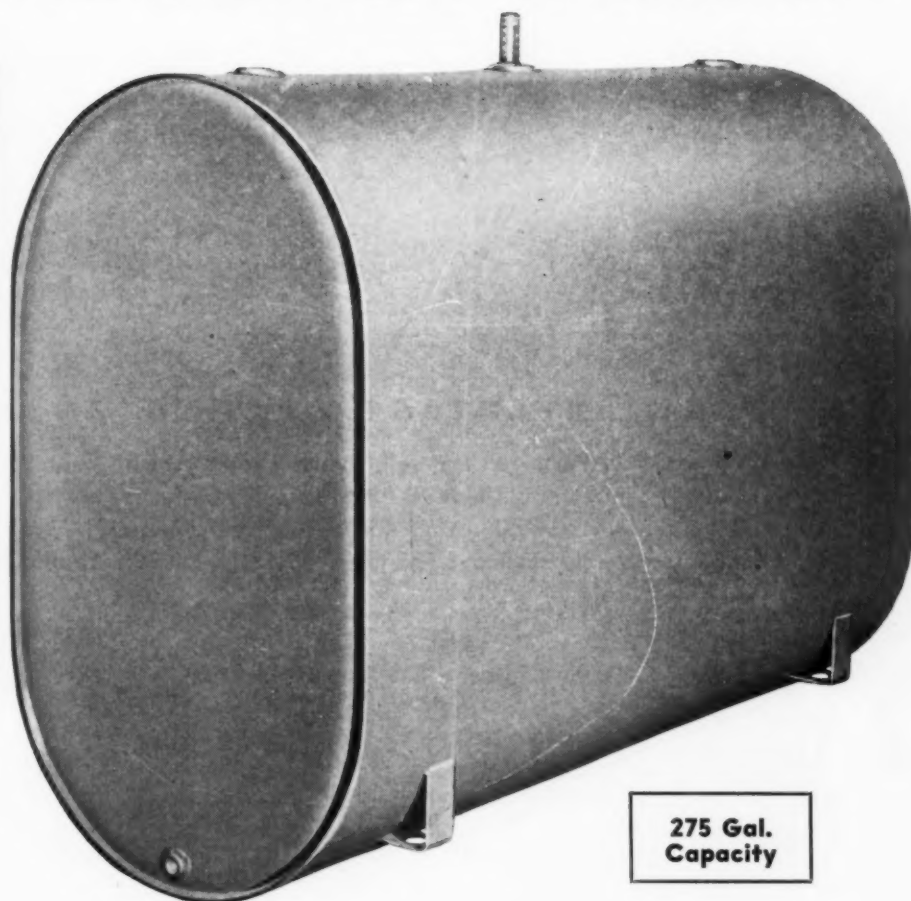
# PROMPT DELIVERY ON BASEMENT TYPE FUEL STORAGE TANKS

PLACE YOUR  
ORDER NOW  
for  
2<sup>ND</sup> QUARTER  
DELIVERY

Only  
**\$37<sup>80</sup>**  
EACH

F. O. B. BUFFALO, N. Y.

IN MINIMUM  
(60 to 66) CARLOAD  
QUANTITIES



275 Gal.  
Capacity

Expertly built, all-welded construction. Obround basement fuel oil storage tanks. Made of 14 gauge steel, outside dimensions 44 $\frac{1}{4}$ " x 27" x 60". Equipped with welded legs and threaded lugs to receive 1 $\frac{1}{4}$ " pipe leg extensions. Tank is U/L approved and has one 2" top opening for intake, one 2" opening for gauge, one 2" opening for vent,  $\frac{1}{2}$ " drain. Shipping weight, 216 lbs. Finished in Luxall Quick-Dry Grey Tank Paint. *Order now and be sure.*

## PRICES AND TERMS

\$37.80 each in minimum (60 to 66) carload quantity.

\$39.00 each in 10 to less than carload.

\$40.00 each in less than 10 quantity.

AT-A-GLANCE Gauges—\$2.20 each additional where desired.

ALL PRICES F. O. B. BUFFALO, N. Y.

*Unless you can furnish satisfactory credit credentials, send check for 25% with order, balance sight draft.*

## MORRISON RAILWAY SUPPLY CORPORATION

METALWELD PROCESS DIVISION

814 RAND BUILDING • BUFFALO 3, N. Y. • PHONE - MOHAWK 5820





more profit for you by making the heater

**Oil saving and more comfort  
for users of oil heat**

**Many  
Thousands  
of Oil Heater  
Users Need  
This Equipment**

**automatic...  
"DETROIT"  
ADD-ON CONTROL  
ROOM THERMOSTAT  
FUEL TRANSFER PUMP  
THREE-WAY VALVE**

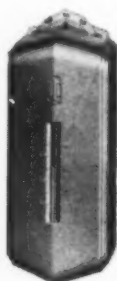
### TAKE ADVANTAGE OF THIS HUGE MARKET

Here are four items you can sell, singly or in combination, to those who now have manually controlled oil heat. By providing thermostat regulation, comfort is increased and oil saved; and oil saving has become very important. The fuel transfer pump makes fuel supply automatic. The three-way valve permits installation of a reserve tank.



**"Detroit" CRC-239-P and  
CRC-239-PF Add-On Controls**  
Fasten to the top of manual type  
CRC-239 Float Valves. Make  
either single or dual valves auto-  
matic under control of No. 411  
Thermostat. Easily applied, reli-  
able in operation—and profit-  
able to sell.

2972



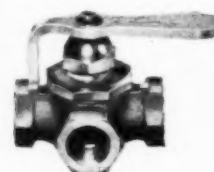
**"Detroit" No. 411  
Room Thermostat**

Provides accurately leveled  
temperature control, elimi-  
nates costly overheating.  
Saves oil. Easily installed  
—easily adjustable. With  
the Add-On Control, it pro-  
vides automatic oil heat  
with a manual type  
CRC-239. The combina-  
tion has a strong appeal  
to owners of space heaters  
and floor furnaces.



**"Detroit"  
CRC-433 Fuel  
Transfer Pump**

Makes fuel supply  
automatic — no more  
hand carrying of oil  
to the heater. No  
spilling, no mess. Auto-  
matically supplies oil  
from main tank. No  
attention needed  
after installation.



**"Detroit"  
CRC-520  
Three-Way Valve**

Permits installation of  
second oil tank for  
reserve, or for less fre-  
quent delivery. Valve  
has three positions—  
right hand tank—left  
hand tank—and all  
off. Cast brass body  
— $\frac{3}{8}$ " or  $\frac{1}{2}$ " F.P.T.  
connections.

**Write for details on these profitable items.**

## DETROIT LUBRICATOR COMPANY

**General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN**

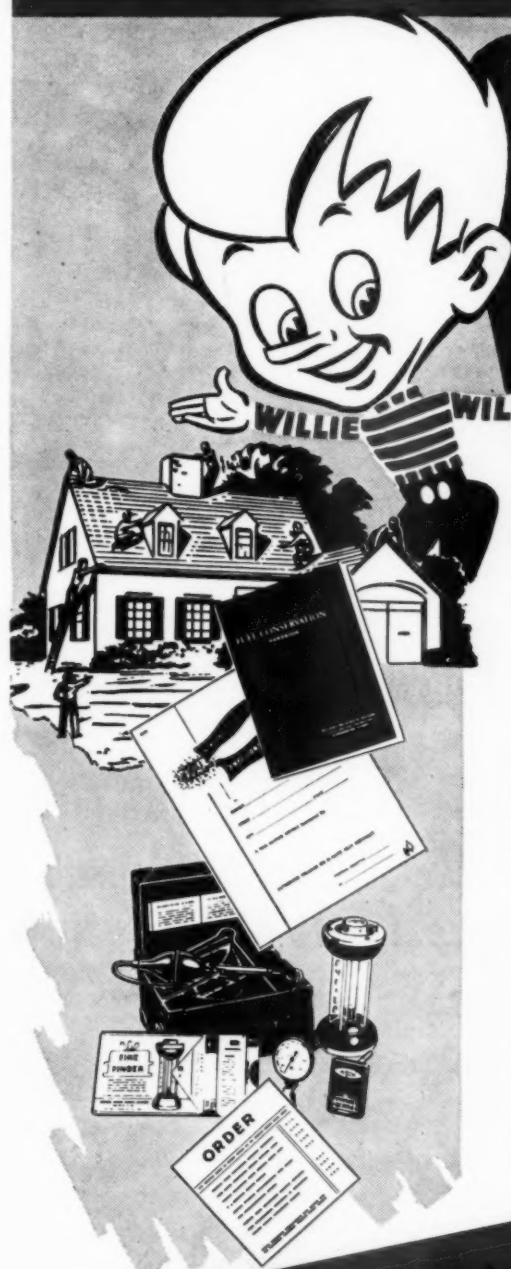
**DIVISION OF AMERICAN RADIATOR & Standard Sanitary CORPORATION**

**"DETROIT" HEATING AND REFRIGERATION CONTROLS • ENGINE SAFETY CONTROLS  
FLOAT VALVES AND OIL BURNER ACCESSORIES • "DETROIT" EXPANSION VALVES  
AND REFRIGERATION ACCESSORIES • STATIONARY AND LOCOMOTIVE LUBRICATORS**

**Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG**



CHECK THE FACTS and you'll find...



**NEW SALES  
NEW PROFITS**

through

## FUEL CONSERVATION ENGINEERING

Right at the time when the fuel oil shortage was most acute—and most in the headlines, Oil-O-Matic dealers began making new sales, new profits and cornering an even larger share of business-building good will in their communities.

The fuel oil shortage was an opportunity for the Oil-O-Matic dealer for he had a field tested program and the tools with which to carry it out locally. For months and years to come, Oil-O-Matic dealers will profit from their new activities as Automatic Heat Merchants.

The oil burner business offers a brilliant future to the merchant who is in partnership with a factory able to supply the plans, ideas and know-how to meet every sales problem.

If you are not already an Oil-O-Matic dealer, get the full story of the Automatic Heat Merchant at the Oil-O-Matic exhibit in the Show—it's the talk and envy of the industry.

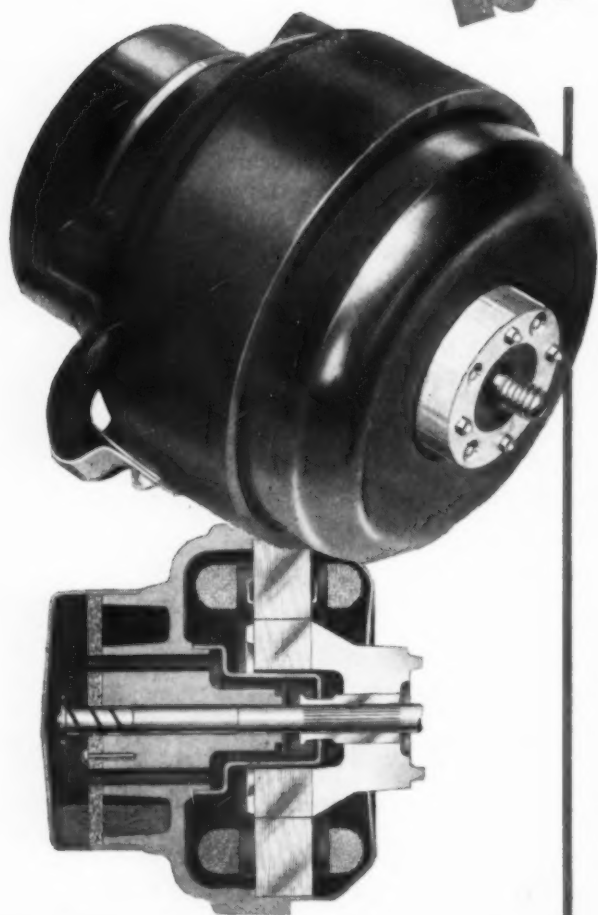
The OIL-O-MATIC Dealer is an Automatic Heat Merchant



*Silver Anniversary*  
**NATIONAL OIL HEAT EXPOSITION**  
*Chicago Coliseum, April 5th to 8th*  
**SPACE 319 - 323 - 420**



**WILLIAMS OIL-O-MATIC DIVISION, Eureka Williams Corporation, BLOOMINGTON, ILL.**



... and power your fan with a



**UNIT BEARING MOTOR**

***Available in QUANTITY Now!***

The one-piece aluminum, die-cast rotor and totally enclosed construction of these motors assure dependable, service-free operation.

Bearings are positively lubricated—need no oiling during the life of the motor. Following the shaded-pole type electrical design, these motors have the low starting torque characteristics especially suited to smooth acceleration.

For details on output ratings and frame sizes, write for GEA-4711. Address: *Apparatus Dept., General Electric Company, Schenectady, New York.*

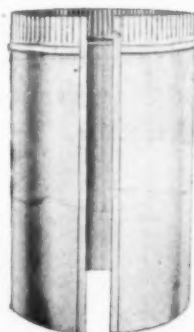
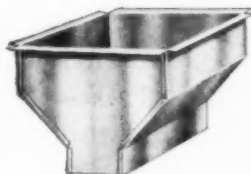
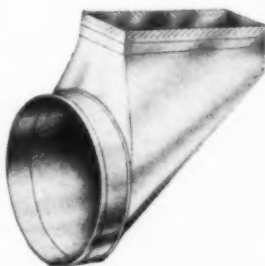
#### **OTHER APPLICATIONS**

Unit Bearing Motors are also used on a miscellany of equipments—pumps, ironers, agitators, animated displays and flicker tapes. Here is an inexpensive, quality motor that can be installed and forgotten. Check your motor needs—the Unit Bearing Motor may be just what you're looking for.

**GENERAL  ELECTRIC**



Showing just a few  
Char-Gale fittings



# CHAR-GALE ALUMINUM *Fittings*

THE ANSWER TO SUCCESSFUL  
AND PROFITABLE FURNACE  
INSTALLATION . . . . .

## Feather Light



The easiest handling fittings ever made! Cut strain and time on installations—cut transportation time and cost—cut handling time on the job.

## Stronger - Longer Lasting



Rustproof clear through! Installations are stronger with aluminum—last years longer.

## Better Looking



More customer satisfaction! The smooth, bright beauty of these fittings does not discolor with heat or time. Needs no painting or covering—just naturally beautiful.

# *And It Costs No More!*

PREFABRICATED  
DUCTS AND FITTINGS  
FOR WARM AIR  
HEATING

## CHAR-GALE

MINNEAPOLIS  
OMAHA

ANOTHER PRODUCT OF CHAR-GALE METAL CRAFTSMEN

"NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"

# Here's an unbeatable combination—



Those houses that use the unbeatable combination of an automatic stoker and the plentiful cheaper sizes of smokeless hard coal don't have to worry about the threat of turning down their thermostats to chilly levels.

Stoker heating is the lowest cost automatic heat with savings up to 50% over other fuels. It's convenient because it feeds from the bin, controls temperature and ash removal automatically. Then too, a full winter's supply of hard coal can be stored in the summer which eliminates the necessity of depending on weather hindered winter deliveries.

Anthracite Institute  
Dept. 3-R  
101 Park Avenue  
New York 17, New York

Please send me more information on anthracite and anthracite heating.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



## ANTHRACITE INSTITUTE

101 Park Avenue • New York 17, New York

Customers are asking:  
"Why CAN WE NOT  
RECEIVE MORE  
CRESCENT TOOLS?"

CRESCENT TOOL CO.

JAMESTOWN, N. Y.

TO OUR CUSTOMERS:

The true answer to your question is that the demand for Crescent Tools is the greatest in the Company's history.

In spite of greatly increased production due to additional space, new machinery of the latest design and more efficient production, the ever increasing demand for Crescent Tools still exceeds our capacity to produce.

To insure equitable distribution, production is allocated to our old customers.

Deliveries and production could unquestionably be increased by lowering our standards - but it is our policy never to sacrifice the quality of Crescent Tools at any time.

The reputation and character of the Crescent organization is your guarantee that those of our products you do obtain will be the finest it is possible to produce.

Very truly yours,

CRESCENT TOOL COMPANY

CRESCENT TOOLS

*Give Wings to Work*



\*"CRESCENT" is our trade-mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.



# NEW CHEVROLET

## Advance-Design Trucks for 1948



**Only Advance-Design Trucks for 1948  
Have All These New and Finer Features:**

★ **New Chevrolet 4-Speed Synchro-Mesh Truck Transmission**



Entirely new Chevrolet developed Synchro-Mesh transmission assures truck users of unparalleled new ease and efficiency in truck operation!

★ **New Chevrolet Advance-Design Gearshift Control**



Unrivaled new convenience and ease of operation in Advance-Design models with 3-speed transmission. Gearshift is mounted on the steering column to provide new efficiency on every hauling job!

★ **New Foot-Operated Parking Brake**



Here's a revolutionary new feature of Advance-Design Models with 3-speed transmission. The new Chevrolet foot-operated parking brake provides safer, more efficient braking, plus new, clear floor area!

★ **New Improved Chevrolet Valve-in-Head Engine**



The world's most economical engine for its size—Chevrolet's power-packed valve-in-head engine is now even finer, with vital new features that assure greater durability and operating efficiency.

★ **New Multiple-Feature Developments**



Chevrolet's Advance-Design provides new splined rear axle shaft attachment to wheel hubs for greater strength and durability in heavy-duty models... New heavier, more durable springs... New propeller shaft bearing-seal design...

### ***The Newest Line... The Greatest Features... The Biggest Values!***

Here are the nation's biggest truck values—with the latest and greatest features of advance-engineering! They're new Advance-Design Chevrolet trucks for 1948—107 models on eight wheelbases—built to deliver *Transportation Unlimited!* See them at your Chevrolet dealer's.

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN



... PLUS THESE FAMOUS PROVED ADVANCE-DESIGN FEATURES:

The Cab that "breathes"\* • Flexi-Mounted cab • Uniweld all-steel construction • Large, durable, fully adjustable seat • All-round visibility with rear-corner windows\* • Extra-durable frames • Full-floating hypoid rear axles • Specially designed hydraulic truck brakes • Thorough cab-sealing insulation • Standard cab-to-axle-length dimensions permitting interchange of bodies... and MANY other fine features.

\*Fresh air heating and ventilating system and rear-corner windows optional at extra cost.

## **CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!**



WYSONG and MILES No. 1296, 8 foot, 12 gauge

## TOPS IN SHEARING

**Accuracy** Ease of Operation and High Production are key features of Wysong and Miles Precision Shears. The massive, balanced semi-steel construction insures perfect alignment and prevents twist, spring or deflection.

**Compensating Holddown** The holddown feet are individually spring-actuated; independent plungers automatically and securely clamp even short widths of material. Varying gauges can be sheared without adjustment.

**Friction Clutch** Disc-type, treadle-activated clutch engages with minimum of shock. For safety,

non-repeat unit can be set, stopping shearing action after each cycle. When on repeat, machine will shear continuously as long as pedal is depressed.

**Precision Back Gauge** The self-measuring ball-bearing parallel back gauge is easily set to .0078 (1/128th) of an inch. One end of gauge bar is adjustable for taper shearing.

**These Features** and every other detail make the No. 1296 a uniformly superior squaring shear. Jigs and fixtures are used in the machining and drilling of every part of every Wysong and Miles machine.

Other Squaring Shears in 10, 12, 14 gauge. Write for complete information.

# WYSONG and MILES Co

GREENSBORO, NORTH CAROLINA

THE FINEST IN SQUARING SHEARS AND BENDING ROLLS



# Timely Tips on Stainless Steel Shop Practices

(No. 4 of a series)



## SHEARING

Use the same equipment you use for ordinary steel, but remember that ENDURO Stainless Steel must be cut through its entire thickness. Hold as keen an edge as possible on shear blades, with a very close adjustment. A clearance of  $\frac{1}{40}$  the thickness of the ENDURO has been found to be a good general rule to follow in blanking operations.



## FORMING

The same equipment used for forming ordinary steel can be used for ENDURO Stainless Steel, the only precaution being to keep dies well burnished and free from tool marks. Polished ENDURO sheets can easily be protected during fabrication by covering them with paper or by applying adhesive tape to brake dies. Similar protection is afforded by other protective coatings applied by either spraying or dipping and allowing to dry.

## WELDING

Any common method except forge or fire welding can be used for chromium-nickel grades of ENDURO Stainless Steel. Electric arc welding is very satisfactory, with reverse polarity for plates and sheets. Gas or acetylene welding as well as atomic hydrogen and Heliarc are used to advantage especially in the lighter gages. ENDURO is especially well adapted to spot welding.



## GRINDING WELDS

Be sure that weld areas stand out in relief above the ENDURO Stainless Steel surface. When ground area appears to widen out, parent metal has been reached. Grind a length of 12 to 18 inches at one time, moving the wheel over the surface fast enough to prevent overheating.



These few hints are typical of the easy-to-use information in the popular pair of books, "THE FABRICATION OF REPUBLIC ENDURO STAINLESS STEEL" and "THE WELDING OF REPUBLIC ENDURO STAINLESS STEEL." Write for your free copies. They'll help get you started in the profitable, ever-growing business of fabricating Republic ENDURO Stainless Steel.

## REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio  
GENERAL OFFICES • CLEVELAND 1, OHIO  
Export Department: Chrysler Building, New York 17, New York

...AND THE  
BEST TIP



ALWAYS  
USE ...

**Republic**  
**ENDURO STAINLESS STEEL**



Other Republic Products include Black, Galvanized, Galvannealed and Electro Paintlok Sheets—Toncan Iron Sheets





**question:**

**WHAT OIL BURNER LINE . . .**  
for replacing today's worn-out burners  
and fuel-wasting furnaces and boilers?

**answer:**

TODAY — when fuel oil conservation is a must — you are well aware of the growing demand for modern, efficient oil burners to replace worn-out fuel-wasters with which so many homeowners are now struggling. So, in choosing a line of oil-fired equipment, you must be sure *above all* that the burner you select *can* and *does* give most heat with least fuel.

That means Petro, the oil burner of *proven* fuel-conserving ability. Now, more than ever before, your customers will appreciate such basic design features as Petro's patented oil-saving nozzle — that utilizes "tubular atomization" to make every drop of fuel oil deliver maximum heat. Made by the world's largest, oldest exclusive manufacturer of oil burning equipment, the Petro line incorporates 45 years' specialized oil heating experience.

You'll profit with Petro under today's conditions — and tomorrow's as well. Established heating and plumbing jobbers in all wholesale trading areas can give you further details on Petro oil burners, boiler-burner units, furnace-burner units, water heaters. Investigate now!

**PETRO**

REG U S PAT OFF

**OIL BURNERS • BOILER-BURNER UNITS  
FURNACE-BURNER UNITS • WATER HEATERS**

**PETROLEUM HEAT AND POWER COMPANY • Stamford, Connecticut**

*Makers of Good Oil Burning Equipment Since 1903*

REFINERIES . . . FUEL OIL STORAGE AND DISTRIBUTION TERMINALS  
NATIONWIDE OIL BURNER SALES AND SERVICE FACILITIES

**WESTERN STATES DISTRIBUTORS:** Combustion Utilities, Inc., San Francisco, California;  
Sullivan Valve and Engineering Company, Butte, Montana; Lawson Supply Company and  
Pace Turpin Company, Salt Lake City, Utah.

# NIAGARA

**33**  
**HEATING**  
**UNITS**

**GAS • COAL • OIL**

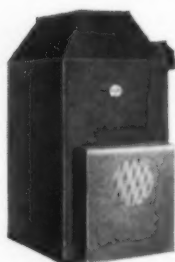
...a line that enables you to meet  
**ALL** requirements **ANYWHERE**  
for residential heating

**56**  
Years' Experience  
manufacturing  
residential  
heating equipment

...backed by a reputation  
for dependability that will  
bring you profits and prestige



Gas-Fired Series 20  
Cast Iron  
Gravity & A.C.



Gas-Fired Series 10  
Steel  
Gravity & A.C.



Gas-Fired Series 10  
Upright  
Steel—A.C. only



Oil-Fired  
Series 30  
A.C. only



Coal-Fired Gravity  
Cast Iron



Coal-Fired Gravity  
Cast Iron or Steel

Package Blower available for A.C. installation

*Write for the complete Niagara story Today*

NIAGARA FURNACE DIVISION • The Forest City Foundries Company • 2500 West 27th Street, Cleveland 13, Ohio

# NIAGARA

**GRAVITY AND WINTER AIR CONDITIONING UNITS**

**YOU'VE GOT TO BE**

*Better*

**TO REMAIN THE**

**LARGEST!**

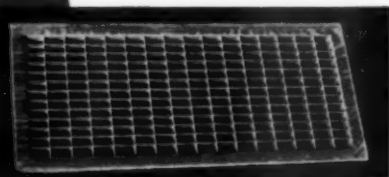
It's not to flatter our vanity that we point out that H&C is the world's largest manufacturer of registers and furnace accessories. That fact has an important significance for you!

To remain the largest in its industry, a manufacturing concern must constantly lead in the design and quality-character of its products, competitive pricing and the cooperative nature of the service it renders. In other words, it must provide a real advantage to the folks it does business with.

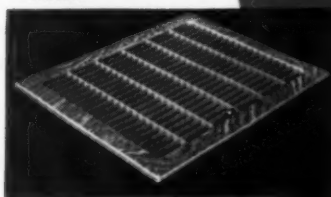
The fact that today, as for more than 47 years, H&C occupies the No. 1 spot in the register industry, quite conclusively proves, we believe, that over the long term period, it pays to deal with H&C.



**THE LINE THAT PROVIDES  
THE IDEAL REGISTER  
FOR EVERY TYPE  
of  
INSTALLATION**

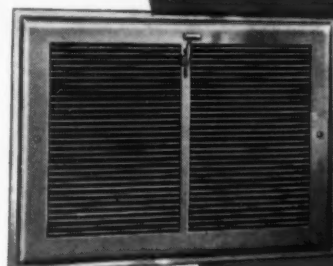


No. 265 "NO-FLEX" Return Air Intake—team-mate of the No. 210. Large free area.



No. 210 "NO-FLEX" Floor Register — Sturdy and Rigid — all that the name indicates. Heel-proof mesh.

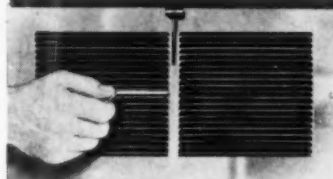
No. 330 — Companion to the No. 130 — for sidewall installation.



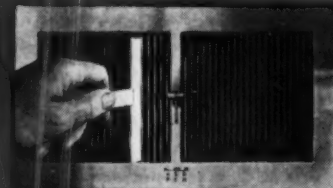
No. 130 Dashboard Register—the finest in quality dashboard registers — excellent for ventilation jobs.



No. 78 — A low cost, but high quality A.C. Register with which you can meet competition without sacrificing customer good will.



No. 75 — for A.C. Conditioning at its best. The only register with the incomparable TURNING BLADE VALVE.



**HART & COOLEY MANUFACTURING CO., HOLLAND, MICH.**  
World's Largest Manufacturers of Registers, Grilles and Furnace Accessories



# How to get Stainless Steel in a hurry!



**A**LL you have to do is telephone, wire or write our warehouse nearest to you.

We have on hand to fill your requirements: No. 2B finish sheets of proven excellence; No. 4 finish sheets of uniform quality; bars meeting high standards of machinability; plates in sizes up to 120" wide and 360" long; tubing, welded and seamless; pipe, angles, channels and welding electrodes in all standard grades and specifications.

Moreover, you have the help of our engineers in selecting the grades of U·S·S Stainless best suited to various types of service or that will fabricate best on your equipment. Free technical bulletins and booklets, showing the many and varied uses of U·S·S Stainless, also are supplied on request. And once a month we publish an up-to-date Inventory Bulletin which lists our stocks of Stainless.

So, whether you need advice and help from our engineers or have a definite order you want filled, you're sure of getting what you want *quickly* by contacting our warehouse nearest you.

*If you use Stainless and are not receiving our monthly Inventory Bulletin, write for it right away.*



## UNITED STATES STEEL SUPPLY COMPANY

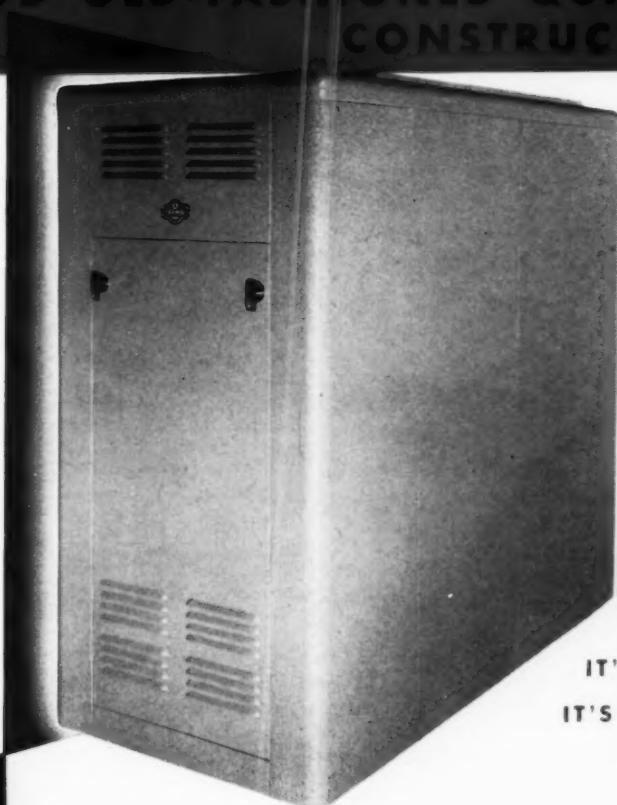
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# UNITED STATES STEEL

# The "New Look" - PLUS...

GOOD OLD-FASHIONED QUALITY  
CONSTRUCTION



**Model  
RX-8**

Oil-Fired  
Air  
Conditioner

83,000 to  
117,600  
B.T.U.

**IT'S COMPACT!  
IT'S HANDSOME!**

## PREMIER PERSONALITIES

**REX STALEY**  
Head of Furnace  
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"I have been in charge of furnace assembly and inspection at PREMIER for many years and I know that PREMIER quality standards today are higher than ever before. Look for the "O.K." tag, initiated by me, that's attached to every PREMIER furnace."

No man who has ever watched a pretty girl will deny the importance of smart styling. But the girl is more important than the dress — and the PREMIER Furnace inside that handsome cabinet is more important than the cabinet.

That's why PREMIER Furnaces, with all their modern styling and scientific engineering, are still made according to good old-fashioned quality standards.

Everywhere in the PREMIER plant you'll see evidence of those quality standards. In the extra thickness of the steel. In seams that are pressure tested. In the large amount of hand work done, to assure perfect fitting parts, tight closing doors, etc.

Yes, we're old-fashioned enough to think that it pays to make quality products, and countless thousands of PREMIER owners and PREMIER Dealers agree with us.

**PREMIER FURNACE CO., DOWAGIAC, MICH.**

# PREMIER

Cast iron Furnaces  
Oil Burners • Blowers • Humidifiers  
Winter Air Conditioners • Steel Furnaces



## Things you hear in smart shops

(Is yours one of them?)



**Certainly!** Almost anyone can afford low-priced Kaiser Aluminum Utility Sheet. And it saves money other ways, too. It's easy to assemble and erect, so it takes less labor, is less wearing on shop equipment, and produces less scrap loss.



**Correct!** You can make a Pittsburgh Lock Seam perfectly with Kaiser Aluminum Utility Sheet. And in making up fittings, you can easily form and join it neatly. You can fasten it with rivets, by welding, with sheet metal screws or by brazing.



**Right!** You don't have to handle Kaiser Aluminum Utility Sheet with kid gloves. You can treat it as you would any sheet metal. It's light but strong, and sheet metal men like to work with it. Lasts for generations, too—never rusts, never needs painting or maintenance.



**You bet!** With your present standard equipment you can do the same things with Kaiser Aluminum Utility Sheet you're now doing with other metals. You can shear it, blank it, emboss it, punch it, route it, drill it and bend it with ease.



Whether or not you're held back by shortages—investigate Kaiser Aluminum Utility Sheet today!

# Kaiser Aluminum Utility Sheet

a Permanente Metals product

SOLD BY PERMANENTE PRODUCTS COMPANY, KAISER BLDG., OAKLAND 12, CALIFORNIA... WITH OFFICES IN:  
Atlanta • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Kansas City • Los Angeles • Milwaukee • Minneapolis  
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*For Satisfactory, Easy Conversion from*  
**COAL to OIL or GAS**

*it's*

**V**



*The Deluxe*

**VICTOR**

**WELDED—RIVETED BOILER PLATE STEEL**



WITH HEAT  
RADIATING

**FINS**

NOW is the time to sell a quality-built coal furnace which you can later convert to gas or oil with ABSOLUTE CONFIDENCE.

This welded and riveted, boiler-plate steel VICTOR deluxe coal furnace is permanently gas and odor tight.

**MORE HOT METAL  
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Air to be heated must rub on a hot surface. VICTOR patented FINS supply the additional hot metal for heating air quickly with LESS FUEL.

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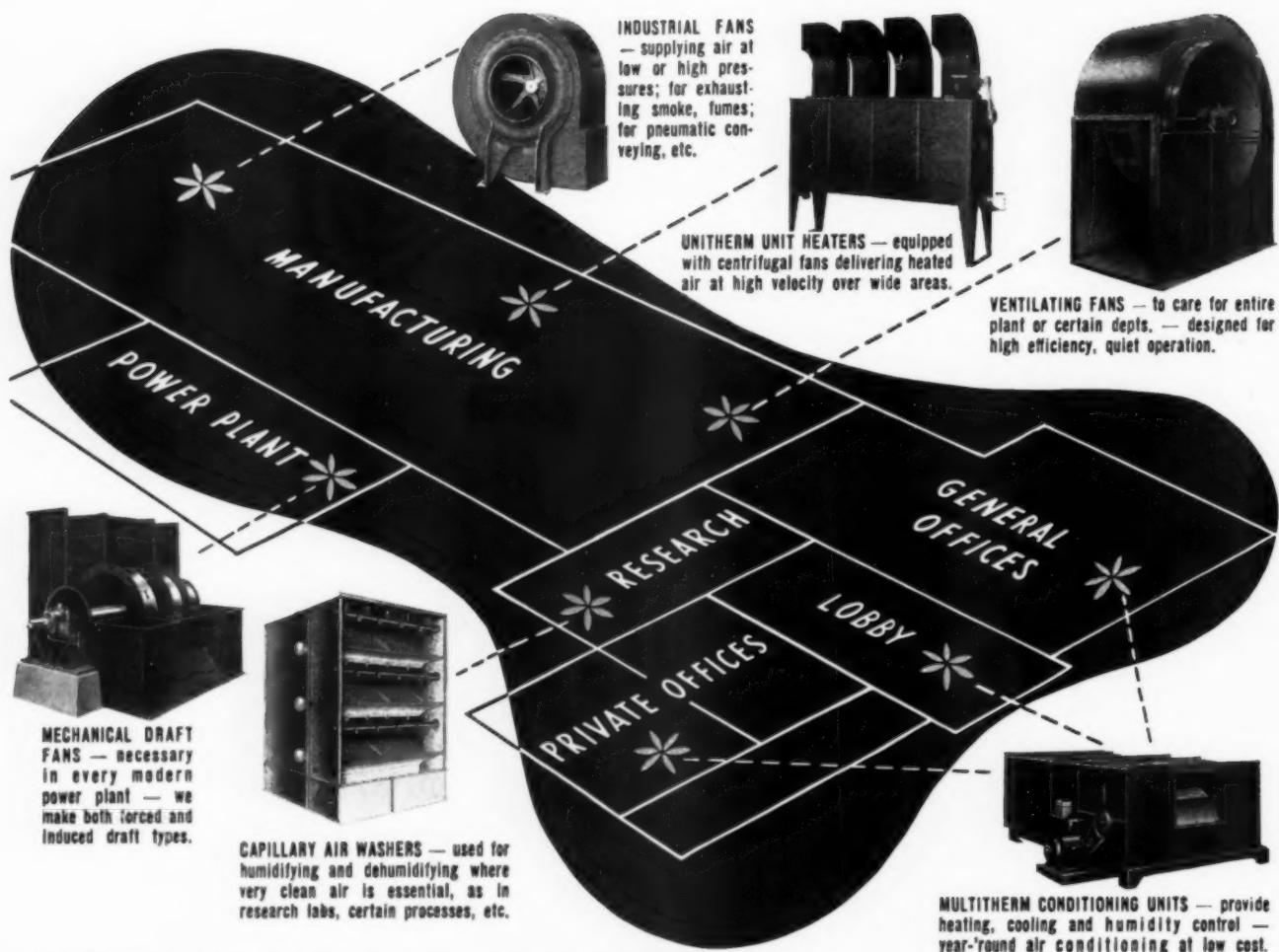
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Not a few industrial plants come to Clarage Fan with ALL of their air handling and conditioning needs.

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Think it over! If the idea appeals, call in the Clarage application engineer in your city — or write us at Kalamazoo.



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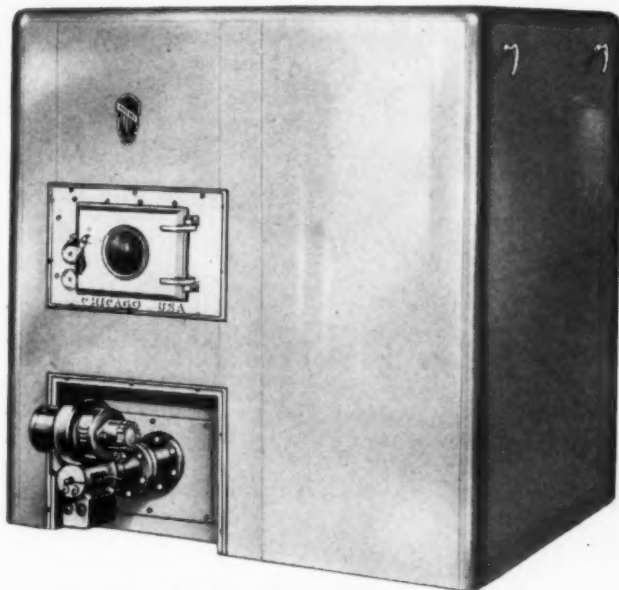
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# THE HESS CLIMATE MASTER

*(easily converted to coal or gas)*

**represents the greatest advance  
in Automatic Radiant Heating**



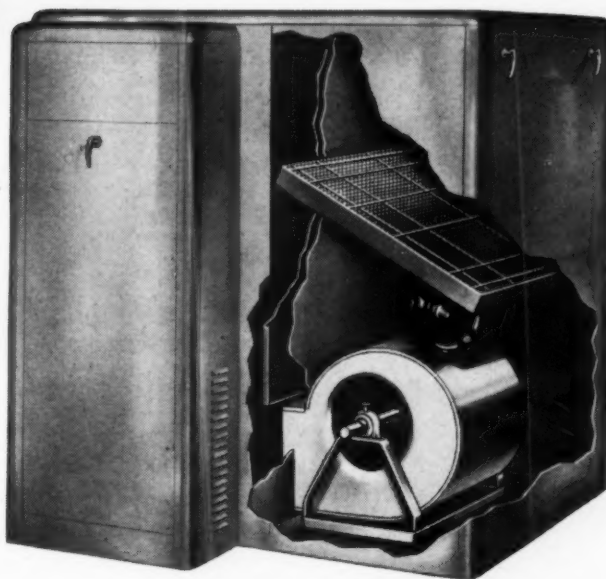
**Standard Model—without vestibule**  
*(Flange or base-mounted burner optional, depending upon availability)*

The cut-away view at the right shows the arrangement of the forced air unit, air filters and heat transmitter. The silent but powerful blower draws the cool air from the rooms thru the filters to remove germ-laden dust and dirt. The cleansed air then passes uniformly and under pressure over the heated surfaces of the heat transmitter and the humidifying element. The filters, motor and blower are in the cool air circuit and therefore are not subject to overheating damage and fire hazard as with other units that draw heated air thru the blower compartment.

The Hess Climate Master has an outstanding advantage over conventional oil-fired furnaces because it is designed for conversion to other fuels, should fuel conditions make this necessary, without sacrificing heating efficiency.

**T**he Hess Climate Master represents the greatest advance in the design and engineering of automatic comfort-making equipment. The powerful, efficient, radiant heat transmitter, oil burner, forced air unit, filters and self-flow humidifier are all combined within one compact, attractive baked enamel cabinet. Best of all, luxurious comfort, health benefits, cleanliness and maximum fuel economy are the outstanding features of this fine equipment.

Models illustrated are equipped with pressure oil burner, completely automatic in operation, designed as an integral part of the Climate Master to assure correct performance, maximum operating efficiency and greatest fuel economy. The de luxe models are furnished with a vestibule enclosure (shown in the cut below) which conceals the oil burner assembly.



**DeLuxe Model—with vestibule**  
*(Blower unit interchangeable for either side of unit)*

A PRODUCT OF

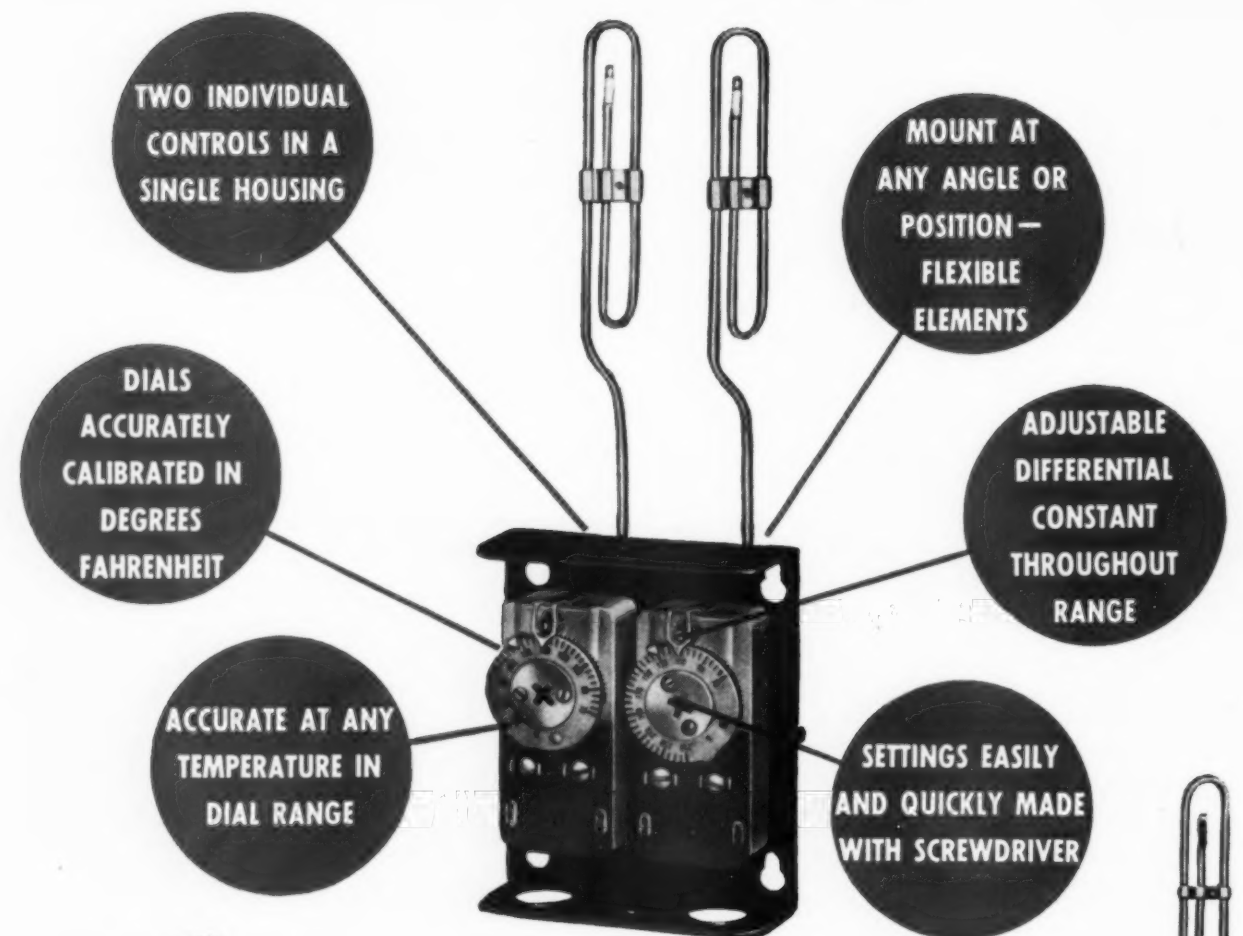
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# Look for these features in a WARM AIR CONTROL!



**W**HITE-RODGERS Hydraulic-Action Fan and Limit Controls offer you all these advantages and more! Accepted as standard by leading manufacturers of heating and air-conditioning equipment, they offer you benefits you can't afford to overlook. Investigate the complete line of White-Rodgers Heating Controls.

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*Controls for Refrigeration • Heating • Air Conditioning*

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## THEY'LL "YES" YOU ALL-SEASON WHEN YOU FEATURE

*The New 1948 Evaporative Kooler-aire with Gyro-Spray  
The Magic-Worker in Evaporative Cooling*

Improved Product • Outstanding Leadership • Effective Sales  
Promotion • Plus Cooperative Engineering Counsel

It's going to be a busy year, an interesting year, a profitable year  
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# New Flexible Duct Connector

**PASSES 'ACID' TEST!**

*Unaffected by 6-month exposure  
to weather, sulfuric acid fumes  
and constant vibration*

Really rugged is the new flexible Fiberglas\* duct connector by Bauer & Black. Proof of its endurance may be seen in an unusual application at the Riverdale, Illinois, plant of Acme Steel Co.

Bauer & Black engineers tested the new connector on a huge ventilating stack over a galvanizing bath. Weather, sulfuric acid fumes, and heavy vibration from below had destroyed previously-used connectors in 90 days. But the Bauer & Black connector shows **NO SIGN OF DETERIORATION** after more than six months.

For elements of the connector, see the diagram. The Bauer & Black Industrial Adhesive Tapes used are unusual and practical because of two unique components:

- A.** *Backing of Fiberglas\* Cloth—thin, super-strong, permanent. Resists heat, light, deterioration. Won't shrink or stretch.*
- B.** *Vulcanizable adhesive whose strength increases greatly under heat, and whose seal grows stronger with age. Sticks with a touch.*

Speedily installed, the new connector helps cut labor costs drastically. Fiberglas tapes and neoprene-coated fabric handle easily, conform readily, seal instantly, give a neat-appearing, airtight fit. The connector fills a long-standing need in heating, piping and air-conditioning.

#### WRITE FOR DETAILS

Full information on applications, source and price will be gladly furnished on request. The Bauer & Black flexible duct connector can save you time and money, improve your installations. Address Dept. T8-3 today. No obligation.



#### HERE ARE THE PARTS OF THE NEW CONNECTOR



Bauer & Black Industrial Adhesive Tape No. 281—Fiberglas fabric coated on both sides with vulcanizable adhesive. Gives airtight seal that grows stronger with age.



Neoprene-coated Fiberglas fabric—sturdy, airtight yet bulk-free.



Bauer & Black Industrial Adhesive Tape No. 263—Fiberglas fabric, coated on one side with vulcanizable adhesive. Like No. 281, stubbornly resists deterioration.

\*Fiberglas (Reg. U. S. Pat. Off. by Owens-Corning Fiberglas Corp.)

Products of

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Division of The Kendall Company • 2500 S. Dearborn St. • Chicago 16

## Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods



# Auer DURA BILT

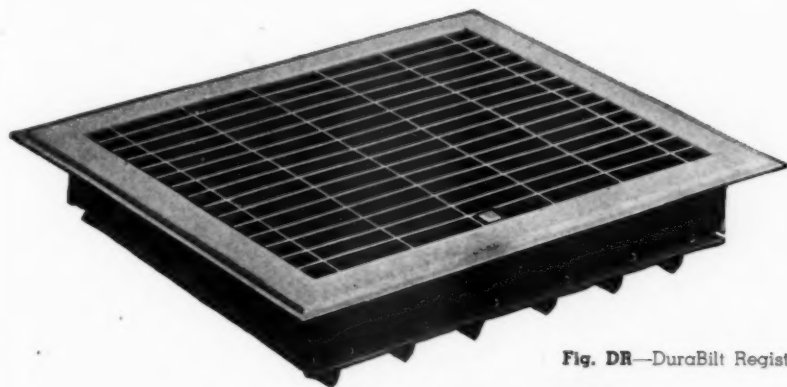


Fig. DR—DuraBilt Register.

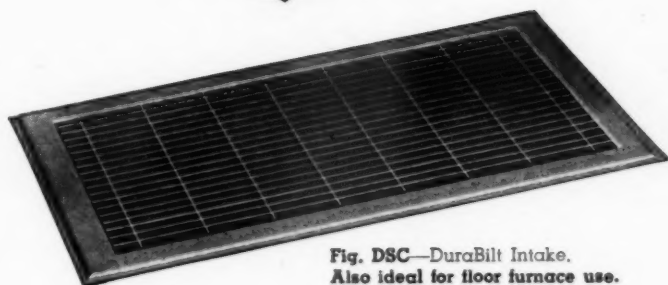
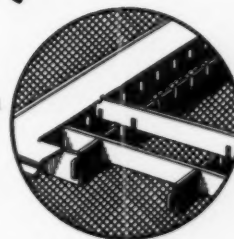


Fig. DSC—DuraBilt Intake.  
Also ideal for floor furnace use.  
(Any size Grille desired).

*Floor  
Registers  
and  
Cold Air  
Faces*

Cross-locked  
design



Precision workmanship marks this fine DuraBilt, which is cross-locked and clinched for SUPER STRENGTH. These registers and intakes are made with great accuracy and carefully assembled, with heavy flat steel bars, mortised and interlocked at every cross-joint. The whole grille assembly is forced together on the press, and tenoned and locked tightly into welded, reinforced frame, resulting in an extra rigid and durable product. Free open area is about 81%.

Improved narrow mesh is used on all sizes. The 7/16" by 1-15/16" opening is heel-proof, excluding small objects such as chair legs, and helping to conceal register box interior. Note the special Auer exclusive patented spring tension valve adjustment, easy operating, non-slipping and positive. DuraBilt employs the best and simplest engineering design ever devised for this type of register. For structural strength far exceeding any demands of normal service, use DuraBilt Registers and Intakes — they cost *no more*.

Write for complete Auer Register Book illustrating and listing all types and models for both air conditioning and warm air systems. Special Grille Catalog also sent on request.

THE AUER REGISTER CO., 3608 Payne Ave., Cleveland 14, Ohio

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**REGISTERS**

& GRILLES for AIR CONDITIONING & GRAVITY



## The Department Store Idea

When you think of a Ryerson Plant, picture a huge department store featuring all kinds and shapes of steel. In place of the ordinary sales personnel, think of a large staff of experienced steel men—a sales department that's been carefully trained to guide your steel purchasing—to see that you get the exact steel you need for the job at hand.

And, when you think of Ryerson Steel-Service, think of a smooth-flowing system of steel supply that eliminates every unnecessary delay between order desk and point of delivery. Think of the most modern steel storing, cutting and shipping methods—methods based on more than a century of performance. And remember that Ryerson Steel-Service functions with the same efficiency and promptness

whether your order calls for pounds or tons.

Naturally, today's great demand for steel frequently unbalances our stocks. But if the steel you need is not immediately available, we'll gladly do everything possible to supply you with a practical alternate.

What does it all add up to? Well, just about the last word in steel-buying convenience. And it's all yours when you contact a Ryerson Plant for any steel requirement.

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles.

# RYERSON STEEL

# AMERICAN ARTISAN

RESIDENTIAL  
AIR CONDITIONING  
WARM AIR HEATING  
SHEET METAL CONTRACTING

## Labor Management Relations Act

IN THE past, contractors in the construction industry were, to a large degree, unaffected by the National Labor Relations Act—the old Wagner Act—because of the unwillingness of the old National Labor Relations Board to concern itself with the labor relation problems of the industry. This was not unnatural since the principle of collective bargaining which the old Act sought to establish had been a custom and tradition in the industry for many years. However, the industry has not been free of abuses. Jurisdictional strikes, for example, have been the outgrowth of the insistence by one union upon its being preferred over another in the allocation of work, and also by the disregard by employers of the work allocation established by unions. The old Board maintained a hands off policy toward these disputes. In contrast, and seemingly to correct such policy, the new Labor Management Relations Act now directs the Board to settle such disputes.

Sometimes the old Board would take jurisdiction in a special situation where the effect upon commerce was so obvious that it could not be avoided. However, these instances were so rare that many employers and unions conceived the impression that their activities were not under the jurisdiction of the Board. That has been an incorrect impression because the activities of the construction industry have been construed as coming within the provisions of the old Act—although rarely invoked—and the new LMRA.

This brings up the question: Does the heating and sheet metal contractor—as a sub-contractor—come under the jurisdiction of the Board and within the provisions of LMRA? The question involves its overall scope which is by no means narrow. Two definitions indicate the type of business activity that comes within its provisions:

“The term ‘commerce’ means trade, traffic, commerce, transportation, or communication among the several States, or between the District of Columbia or any Territory of the United States and any State or other Territory, or between any foreign country and any State, Territory, or the District of Columbia, or within the District of Columbia or any Territory, or between points in the same State but through any other State or any Territory or the District of Columbia or any foreign country.”

“The term ‘affecting commerce’ means in commerce, or burdening or obstructing commerce or the free flow

of commerce, or having led or tending to lead to a labor dispute burdening or obstructing commerce or the free flow of commerce.”

So, there is a difference between being in a business engaged in interstate commerce and being engaged in a business which affects commerce. The first definition involves the shipment of furnaces and sheet metal products, for example, across state boundaries, while the second may involve activities that are purely local. By definition the Act includes both interstate commerce and local business activity as long as the latter, of course, affects the free flow of commerce.

As far as the actual performance of labor is concerned, heating and sheet metal contractors are usually engaged in operations which involve the application of materials and equipment to a building that is immovable and cannot be shipped about in interstate commerce. But that does not mean that their operations do not affect commerce. The fact that a contractor's materials and equipment have completed their interstate journey before their use by the contractor does not mean that an interruption of their final use would not affect commerce. The General Counsel of the Board recently discussed the interpretation of the term “affecting commerce” with employers in the construction industry and stated if operations in a locality were blocked, to that extent interstate commerce would be blocked. It does not matter whether the materials and equipment were to be used in a public building, an apartment building, or in a private home—the principle remains the same. It is not necessary that the final product move in interstate commerce because the Board is not governed by the ultimate product's being in interstate commerce.

This entire aspect of LMRA is involved in the sole question, “Does the business affect commerce?” Recent rulings by the Board confirm the statements of the General Counsel and so, the activities of heating and sheet metal contractors are construed as affecting commerce and come under the jurisdiction of the Board and within the provisions of LMRA.

Actually the construction industry always has been within the meaning of the two labor relations Acts because the term “affecting commerce” is indeed a broad one.

*This is the second of a series of editorials on the Labor Management Relations Act.*



★ ★ ★ ★ ★ ★ ★ ★ ★ ★

*Arnold Kruckman's*

## *Washington Letter*

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



### Steel For European Recovery

FOR many months, in fact for the past year and a half, we have repeatedly been told here, by visiting firemen, that vast quantities of sheet steel have been going out of the country. Invariably we also hear that almost any one with a pull might get a license from the State Department, and that eastern jobbers have sold sheets to foreign customers at exorbitant profits.

This correspondent does not believe that great quantities of sheet steel have been shipped abroad, chiefly for the reason that we have not produced large quantities. The most accurate information that has been obtained by the Senate Small Business Committee—one of the better fact-finding agencies developed in the past year or two—reveals that during the war the general steel capacity was greatly expanded, and the capacity for products such as plates definitely increased. But there was no added construction of sheet steel facilities because that expansion was unnecessary for war purposes. The capacity for sheets actually contracted and diminished, due to obsolescence, as well as the need to scrap certain facilities. On the other hand, if the records of the Senate Small Business Committee are not absolutely cockeyed, there has been a tremendous increase in demand for sheets, due to the pent-up consumer needs, and also to the various new uses for sheets. The very level-headed Director of the Committee, George F. Meredith, points out it is easily possible to understand the situation when one realizes that almost all important consumer industries developed an added need for sheet steel during the past two years, particularly industries which produce automobiles, refrigerators, stoves, washing machines, kitchen cabinets, stoves, furnaces, canned goods, machine tools, industrial equipment, farm machinery, railroad cars, factory buildings, ships, aircraft, engines, tabulating machines, steel bridges, and other similar articles. He points out, directly or indirectly, sheet steel is now used in the production of virtually every other commodity. It is interesting to contemplate the figures the Committee uses as its yardstick in measuring the

application of steel. On the basis of 1939, it has been found \$1 million worth of products made by the metal fabricating industries involved the use of 2,900 tons of ingot steel. The same amount spent for motor cars and industrial equipment spelled 2,500 tons of steel. A million dollars worth of construction used 1,650 tons of steel. It is interesting to learn practically every industry spends a certain part of a million dollars for steel. For instance, it is estimated the lumber, furniture, paper, and printing industries used 460 tons; chemical producers, 300 tons per million dollars sales; stone, clay, and glass producers, 290 tons; transportation industries, 280 tons; textile and leather industries, 260 tons; food processors, 260 tons; trade and restaurants, 230 tons; fuel and power industries, 220 tons; rubber producers, 200 tons; agriculture and fishing, 150 tons. The average for all industries, per million dollars sales of products, is 660 tons of steel.

#### *Sheet Steel Exports*

Of course, none of us is so naive as to believe that there have not been some odd transactions in sheet steel by those who in some way managed to get the breaks somewhere, somehow. There are people in the fabricating business, big business, who boasted that they obtained all the sheets they wanted, and that they did a huge export business. Also it is no secret that under the Hyde Park deal between President Roosevelt and Premier King of Canada the Canadians are able to obtain steel without let or hindrance from any export or any other kind of regulation. In effect they could bring steel into Canada in any quantity, so far as the actual law is concerned. It is the habit here in some quarters to regard Canada virtually as the 49th State, entitled to its needs. The official figures for export of sheet steel the past year totals 350,000 tons, something equivalent, roughly, to more than 20,000 tons per month. This steel went to South America, to the Philippines, Indonesia, Africa, Asia, to all parts of the world as well as to Norway and other parts

of Europe. It may be recalled that Norway, and other sections of Europe, finished the war with steel producing facilities virtually destroyed. Their plight is one of the conditions that tugs at the heartstrings of the steel industry. Also it will be remembered the export regulations have not been quite so stringent in the past as they are now, since new export controls became effective March 1. It is true that steel was under export controls; but some of the controls, as recently outlined in these columns, might be described as extremely remote controls. No shipper was required to secure the license for the specific shipment of the steel to a particular customer. He could lump his shipments, and distribute them to those who wanted the steel, after they arrived in the country of destination. The general supposition is that much unrecorded steel got by that way, and that much steel was peddled when the shipment arrived at its foreign port. It even is not improbable that some of these broad and general licenses were commodities in which some of the shrewd exporters also dealt. There was an inclination to be lenient in this field on the theory that if we were reluctant to permit steel to go to the foreign places we would find it difficult to obtain the lead, tin, burlap, manila fibers, and other products from abroad which we needed. It was a common assumption that the foreigners might hold their raw materials and products away from us in reprisal for anything we might deny them. It was not supposed that they needed our dollars so much that they could go along without them and not starve. The argument about the reprisal of the foreigners of course does not jibe with the argument that we must go to their rescue with the Marshall Plan, or have it on our conscience that we would let the world go to wreck and ruin.

### **New Steel Export Controls**

It is quite apparent that there was something wrong with the system of export controls. The new controls, which went into operation March 1, require that the shipper obtain a specific license for each shipment, and that each shipment must go to a specific and particular customer. The close check that is to be made on each application for a license is another indication that something was not quite right with the old system. The applicant now must be able to prove that he can get the steel he plans to ship abroad; he must produce beyond the slightest possibility of doubt an absolutely bona fide order from the customer abroad to whom he wishes to send the steel. These applications go through the hands of several trained inspectors. They apply a number of criteria to the application to determine whether it is legitimate. The controlling considerations apparently are: the country to which the steel is to go; the end use of the shipment of steel; and the price. In most of the primary uses of steel the end use will be the determining yardstick. But in other commodities, such as barbed wire, for instance, price will be the factor. This price criteria is the phase of the new export regulations which has raised so much hell. The intent of the price yardstick is to obtain for the foreigners, American products at the lowest possible price. The argument is that their funds are sparse, they need dollars, and they must be helped to stretch their dollars as far as possible. Consequently, the exporter

must submit his prices. These are closely scrutinized. If the competing exporters offer to supply the articles more cheaply, they get the license. The operation of this program already has impelled a number of exporters to quit the business, at least temporarily. The export-brokers who have spent considerable energy, time, talent, and money, in developing an export market for their clients, now find themselves in competition with their clients. Obviously, the jobber cannot sell at a price as low as the manufacturer is able to sell. The new regulations even have wiped out the historic priority, which enabled those who had been in business a long time to have an advantage over the "Johnny-come-latelys" who jumped into the business when it suddenly seemed prosperous.

### **Monthly Export Quotas**

You unquestionably understand that the export steel comes under a quota restriction. This quota is set up monthly by an Interdepartmental Committee with representatives from the Department of Commerce, Foreign and Domestic Bureau; the Office of International Trade; the Department of Justice; the Office of Defense Transportation; the Department of State; the Export-Import Bank; and other agencies. This group determines how much shall be sent abroad, how much you may have for your domestic needs; and it probably determines how the steel shall be used; and what types of steel shall be given preference, and who shall be given preference. There is every reason to believe the steel experts and the technological brethren from economics and other activities are not a whit less human than any of the rest of us. It is natural that they should have some effect on the problems of the industry far beyond what we may immediately perceive or understand. This is Government *in camera*, the sort of Government operation which is gradually becoming more common, although you may not know it. It is the functionalism which is centralizing and federalizing our political administrative practices. This correspondent, who has seen the system unfold swiftly the past few years, is very doubtful whether or not we will ever be able to rid ourselves of this condition. It is collectivism in its franker and more unvarnished state. It has recently run into collision with State's Rights, and American individualism, in the South, and in the West. In those areas, where the people have not clotted up in the huge masses which pack in and around the great Eastern cities, there still appears a reluctance to accept the regimentation. But there are signs that the momentum is greatest in the areas of massed population.

### **New Marshall Plan Agency**

Official estimates are that we will be shipping abroad from 7 million to 9 million tons of steel annually, within 24 months. If we reach anywhere near this volume in the very near future it means that we will be shipping from 36 million to 45 million tons of steel to Europe and elsewhere in the five year period outlined for European recovery. How that steel will be shipped is interesting. The understanding here now is that Congress will create an institution to be known as the European Recovery Administration, when the Mar-

(Please turn to page 194)

REMARKS	CASH		CUSTOMERS		SALES				PURCHASES (Less discounts)					CASH EXPENSES												ALL OTHER PAYMENTS	
	Rec'd.	Paid out	Charges	Credits	Departments			Total	Freight	Express	Etc. in	Returns	Allow.	Owner's wages	Emp's. wages	Rent	Utilities	Store supplies	Equip. repairs	Advt.	Delivery	Cash short	Taxes	Licenses	Misc. expense	Withdrawals	Explanation
					A	B	C																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

# Bookkeeping Simplified

By Betty Lee Gough

New Orleans, La.

A STUDY was made recently of business failures in St. Louis by the U. S. Department of Commerce. The reasons behind the failures of thirty small companies were examined. Of the thirty, only two had kept accurate books to tell them whether they were making or losing money, and which operations were profitable, which unprofitable. Until bankruptcy was upon them, many of these firms did not know that they were losing money. Had they kept simple but accurate books, they would have known in advance that business was not good. Knowing this, they could have found the factors that made it bad, and perhaps corrected them. To be sure, each of the failed firms kept records of a sort. Often, they were no more than notebook notations of cash pay-outs and receipts. Such records indicate nothing. A simple system of true bookkeeping, which is only a little more trouble to keep, could have warned the bankrupt businessmen of approaching failure perhaps in time to do something about it.

## Bookkeeping Essential

While bookkeeping is no guarantee of certain business success, in every study made of business failure a lack of it glares out like a neon sign. In addition to telling when and where the company is making money and warning of unprofitable operations, bookkeeping is a must for income tax purposes. Section 54 (a) of the Internal Revenue Code provides that "Every person liable to . . . tax . . . shall keep such records . . . as the commissioner, with the approval of the Secretary of the Treasury, may from time to time prescribe." The commissioner's ruling in turn calls for business men to "keep such permanent books of account or records, including inventories, as are sufficient to establish the amount of the gross income and the deductions, credits and other matters required to be shown.

The books of records shall be kept at all times available for inspection by internal revenue officers."

*Hundreds of heating and sheet metal contractors*

*and other business men miss out on legal deductions because they do not know the expenses that can be taken off their returns, nor how to deduct them.*

## Types of Records

Basically, there are four kinds of records necessary to the successful operation of a company: sales records; records of credit operations and cash sales controls; expense records; and special sales, income, social security and withholding tax records.

Sales records are not merely figures showing how much business was done today and how much yesterday; they are a tool with which to estimate how much will be rung up tomorrow. They show when volume is slipping. They show where it is slipping. They also show when and where volume is gaining.

It can all be kept simply in one book—along with the other records necessary to the operation of a heating and air conditioning company. Only a few minutes' work is needed each day. Let's look at the book in which all of these records can be kept. At the end of the day, the total sales, and the cash and credit transactions, should be tabulated and transferred to the main control sheet.

At the end of the month, the columns are added and a total sales figure for the month as well as cash and credit figures are discovered. Besides showing how much business was done, these indicators tell the contractor how his business is going. Is business as good as last year? Better? A comparison of the figures for two months a year apart tells this. If sales have fallen off, it's a good indication that the selling tools must be put to use.

## The Credit Problem

Sales records, however, are only a part of the picture. There are other things the contractor should know about his business. Are you making money on credit sales? How many "slow" accounts are there on your books? How much is owed to you—and is it a healthy or an unhealthy percentage of your total sales? How



much can any given customer carry? *How much credit can your firm profitably carry, and are you undercutting it, hitting it on the nose, or exceeding it?*

Many heating contractors have failed because they carried too much credit. An accurate record would have warned these bankrupt operators that trouble was coming and would have told them, moreover, where the trouble was. The average contractor can afford to carry very few "slow pay" accounts. Consequently, the records must show the complete status of each customer's account so that accurate controls can be kept on his credit.

If credit sales during the week amount to more than collections, as shown immediately by the one book control sheet, an effective stop light warning has been flashed. It is time to watch the next week, and the one after, carefully. If the *trend* of credit selling is fewer collections than dollar sales, it is time to take steps to put the credit ledgers on a more healthy basis. Credit records are simply to keep. Insistence on seeing that the totals are promptly and accurately entered first on the customer ledger, second on the master control sheet, is the secret. The ledger insures that credit purchases will be billed promptly and properly; the control sheet tells the contractor the status of his credit selling business at any given time. The ledger should indicate (1) date of sale and date of work completion; (2) the total to date; and (3) credits, so that a complete statement is available at all times. Credits, like charges, should be entered at the end of the day on the master sheet. An easy way to do this is to issue receipts in duplicate, keeping the carbons with sales slips.

### Depreciation

Expensive equipment is often purchased on long term credit. The Department of Commerce, in an advice book, points out that "You should know what your costs are on your present equipment. These costs should be stated as so much a year, and should include annual repairs and maintenance (for example, the electricity required if any), and each year's proportionate share of the original cost. An estimate should also be made of these elements of expense for new equipment." Depreciating these fixtures is simple. Take, for example, a machine that cost, let us say, \$1000, and which is expected to last for five years. At the end of that time, it is estimated that the machine will have a trade-in value of \$100. Dividing \$900 by five years, the expected life, we get \$180. That is the annual depreciation. At the end of one year, your investment is \$720. At the end of two years, it is \$540. At the end of five years, it is zero.

It is necessary to know how to depreciate fixtures in order to figure up the year-end profit and loss statement upon which income tax payments, among other things, are based. There is one last item which must be entered on the important control sheet before figuring the profit and loss statement. This is wages. The record should show the gross wage paid; the amount deducted for Federal old age benefits; the sum (if any) taken out for state social security; the income tax withheld from wages; and the net salary. The amount which is entered on the final profit and loss statement is the gross wage paid. However, the other information

Item	Amount	Per cent of net sales
Net Sales .....	\$	
Less: Material Purchased .....		
Labor .....		
Cost of Merchandise Sold .....		
Gross Profit .....		
Less: Operating expenses:		
Wages:		
Employees' wages .....		
Store Expenses:		
Rent or occupancy .....		
Heat, light, power and water .....		
Supplies .....		
Repairs to equipment .....		
Depreciation of equipment .....		
Advertising .....		
Delivery expenses (not including wages) .....		
Management losses:		
Bad debts .....		
Cash shortages .....		
Taxes and licenses (except sales, real estate, and income) .....		
Miscellaneous expenses .....		
Total operating expenses .....		
Net operating profit .....	\$	

is necessary in filing quarterly social security and withholding tax returns for the Collector of Internal Revenue. Lack of detailed knowledge of shop expenses—and of what are legal deductions—has resulted in many contractors unknowingly overpaying their income tax. It has resulted in others taking deductions to which they were not entitled, or which they could not prove by book entries. The result for these firms was usually a 6% interest charge—and sometimes penalty assessments as well.

### Profit & Loss Statement

Aside from the fact that it simplifies the filing of tax returns, an accurate profit and loss statement is an indispensable tool. It tells not only how much was made or lost, but where it was made and what expenses cut down the net. Essentially, the profit and loss statement is no more than a condensation of the year's records. It can be taken entirely from the monthly master control sheet of the one-book bookkeeping system. This is what a profit and loss statement tells you: the net sales, and other income. This gives the *gross* income. From this figure, the following are subtracted: wages, rent, utilities, telephone, supplies, repairs, depreciation, advertising, bad debts, cash shortages, taxes and licenses, and miscellaneous expenses such as freight and express. The amount left is the net profit for the year.

These same entries, transferred to the income tax form, give Uncle Sam a clear picture of your business. The one-book system (which should be kept for at least five years) and receipts, cancelled checks, etc., are there to back up claims made on the income tax return.

What expenses are deductible from gross profits on the tax return? Which expenses are not?

Supplies of every kind are expenses of the business. Postage is an expense. If you buy a broom to sweep the floor, that is a supply expense. Freight paid on shipments is deductible. Advertising, entertainment, wages (but not the proprietor's), utilities, gasoline used for delivery, bad debts, cash losses, thefts, rent, repairs, depreciation, taxes (except sales and income taxes); all are deductible.

# Estate Planning

Joseph G. Dingle, CPA

Ottawa, Illinois

**I**N THESE days of high taxes—income and estate—the wise man is looking into the matter of his personal estate. The old idea of devoting a lifetime to building up a nice estate to be passed on to the family at death is now most expensive. The impact of the heavy income tax on sizable income prevents the growth of one's estate, and the federal estate and state inheritance taxes, along with the costs of administering the estate take a substantial part of the estate. There is another factor which, at this time, is taking a heavy toll and that is the inflated values which form the basis of valuation for estate tax purposes. Real estate today has a fair market value far in excess of its real value, and for tax purposes, it is the "fair market value" at the moment of death that establishes the tax basis.

The average man of means has kept all his property as his own and, under such circumstances, the income therefrom is taxable to him. Except in the community property states, the average wife has little or no property of her own and consequently has no taxable income. There is some indication that Congress, in some future revenue act, may extend to all taxpayers in non-community property states the privilege of dividing all income between husband and wife, as is, of necessity permitted in the community property states. If and when this is done, some of the tax burden will be shifted from the husband, but it is our thought that one should not wait for this expected legislation. It may not come, or if it does come, it may be only for income tax purposes and not recognize the wife as the real owner of such income. There is the problem of reducing the husband's estate—before his death—to avoid the heavy estate and inheritance taxes and this, in our opinion, may not be accomplished by the expected legislation.

## Exemption for Gifts

The Federal Gift Tax Act permits a donor to make as many gifts annually as he wishes, but does require that a Gift Tax Return be filed by such donor, disclosing all gifts exceeding \$3,000.00 to a single donee. Gifts under \$3,000.00 do not require a return, and the first \$3,000.00 to each donee is excluded each year. Then, in addition to this \$3,000.00 annual exclusion to each donee, the donor has a lifetime exemption from the Gift Tax of \$30,000.00 which he may use as he sees fit. To illustrate, the donor may each year give up to \$3,000.00 (in cash, or in property at its then fair market

value) to each of any number of persons without the necessity of filing a gift tax return. If, however, he should give his wife cash or property having a fair market value at the time of the gift of, say, \$10,000.00, this gift must be reported and the basis would be as follows:

Gift .....	\$10,000.00
Less Annual Exclusion .....	3,000.00

Net Gift .....	7,000.00
Exemption Claimed .....	7,000.00

Taxable Gift .....	none
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By claiming the exemption of \$7,000.00 the donor has a balance of \$23,000.00 remaining from his lifetime exemption of \$30,000.00, and this may be used in future gifts. Assume that in the following year the husband gives his wife \$30,000.00. Another Gift Tax return will be filed for that year and the computation will be:

Gift .....	\$30,000.00
Less Annual Exclusion .....	3,000.00

Net Gift .....	27,000.00
Exemption Claimed .....	23,000.00

Taxable Gift .....	4,000.00
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As will be seen, the total gifts—in two separate years—aggregate \$40,000.00 and the taxable gift is only \$4,000.00. If the \$40,000.00 gift had been spread over four years, \$10,000.00 each year, the annual exclusions would have been \$12,000.00 (\$3,000.00 per year for 4 years) and the remaining \$28,000.00 would have used up only that amount of the \$30,000.00 lifetime exemption, leaving \$2,000.00 to be used later before incurring gift tax liability.

Under these circumstances it will readily be seen that by careful planning it is possible for the head of a family to divest himself of a substantial part of his property without incurring excessive gift tax liability, and thus place his remaining property in such shape as to prevent heavy estate and inheritance taxes, also administration costs, which are, usually, based upon the total amount of the estate.

## Reducing Income Tax

If the head of the family has divested himself of a substantial portion of his property, he has by such act divested himself of the income produced by such property, thereby greatly reducing his own income tax

liability. In a recent discussion of incomes taxes (AA, Feb. '48), we used a tax table for individuals and corporations. By referring to that table, it will be seen that by eliminating income from property, the head of the family will save taxes at the higher rates, while the members of his family who own the property and receive the income therefrom will file their own tax returns and pay taxes thereon, beginning with the lowest rate. If the head of the family has annual income of \$12,000.00 from personal services and \$1,000.00 from say, dividends, on the total income of \$13,000.00, and claims 2 exemptions (self and wife) the tax would be \$3,049.50. If, however, the securities were owned by the wife and each filed separate returns, the husband's tax on his \$12,000.00 would be \$2,869.00 and the wife's tax on her \$1,000.00 would be \$76.00, a total of \$2,945.00, a saving of \$104.50. This tax saving is only a part of the over-all benefits accruing from the gift. The value of the securities producing \$1,000.00 income would be between \$20 and \$25 thousand, and to divest himself of this part of his total estate would, in the end, result in a saving in estate and inheritance taxes, also administration costs.

There is another advantage to this program of dividing one's estate during his lifetime. Who can better teach a wife how to manage property? If, as has been the rule, the husband owns all property and attends to its management so long as he lives, and doles out weekly amounts to the wife for household and personal uses the widow usually finds herself possessed of property and has no idea of its use or value. Sooner or later, the widow finds herself in financial difficulties and it is too late for the husband to come to her assistance. The same applies to the children. Where the husband and father makes a liberal distribution of his property during his lifetime, he can, by wise counsel and supervision, teach his wife and children how to employ property intelligently and that the best results are obtained from use of income only for current living expenses. The most important lesson is that property is valuable only in its ability to produce income, and by the time of husband and father has accumulated some property, he has also acquired some age and experience, which he can pass on to the members of his family to the advantage of all.

Attention is called to the Tax Rate Table, for the Basic Estate Tax, which applies on net estates after deducting an exemption of \$100,000.00 and the Tentative Estate Tax, which applies on net estates after deducting an exemption of \$60,000.00. These two estate taxes apply, and on an estate of, say, \$150,000.00 the basic estate tax would be \$500.00, while the tentative estate tax would be as follows:

Total Estate .....	\$150,000.00
Less Exemption .....	60,000.00
Net Estate .....	90,000.00
Taxable as follows:	
First \$60,000.00 .....	9,500.00
Next \$30,000.00 @ 28% ..	8,400.00
Total Tentative Tax ...	17,900.00
Basic Tax .....	500.00
Total Estate Tax .....	18,400.00

## Estate and Gift Tax Rates

### Basic Estate Tax Rates

Net Estate after deducting  
\$100,000.00 exemption

From	To	Tax	Plus %	On Excess Over
0	\$50,000.00	0	1	0
\$50,000.00	100,000.00	\$500.00	2	\$50,000.00
100,000.00	200,000.00	1,500.00	3	100,000.00
200,000.00	400,000.00	4,500.00	4	200,000.00

with maximum rate of 20% on amounts  
over \$10,000,000.00.

### Tentative Estate Tax Rates

Net Estate after deducting  
\$60,000.00 exemption

From	To	Tax	Plus %	On Excess Over
0	\$5,000.00	0	3	0
\$5,000.00	10,000.00	\$150.00	7	\$5,000.00
10,000.00	20,000.00	500.00	11	10,000.00
20,000.00	30,000.00	1,600.00	14	20,000.00
30,000.00	40,000.00	3,000.00	18	30,000.00
40,000.00	50,000.00	4,800.00	22	40,000.00
50,000.00	60,000.00	7,000.00	25	50,000.00
60,000.00	100,000.00	9,500.00	28	60,000.00
100,000.00	250,000.00	20,700.00	30	100,000.00
250,000.00	500,000.00	65,700.00	32	250,000.00

with maximum rate of 77% on amounts  
over \$10,000,000.00.

### Gift Tax Rates

Net Gift after deducting  
\$30,000.00 exemption

From	To	Tax	Plus %	On Excess Over
0	\$5,000.00	0	2¼	0
\$5,000.00	10,000.00	\$112.50	5¼	\$5,000.00
10,000.00	20,000.00	375.00	8¼	10,000.00
20,000.00	30,000.00	1,200.00	10½	20,000.00
30,000.00	40,000.00	2,250.00	13½	30,000.00
40,000.00	50,000.00	3,600.00	16½	40,000.00
50,000.00	60,000.00	5,250.00	18¾	50,000.00
60,000.00	100,000.00	7,125.00	21	60,000.00
100,000.00	250,000.00	15,525.00	22½	100,000.00
250,000.00	500,000.00	49,275.00	24	250,000.00

with maximum rate of 57¾% on amounts  
over \$10,000,000.00.

As will be seen from the computations above, the \$30,000.00 carries a total tax of 29%—1% Basic and 28% Tentative—and had the decedent given this \$30,000.00 to his wife and children, he would have paid no gift tax, and the net saving in estate tax would have been \$8,700.00. In a recent discussion of means of effecting income tax savings, we suggested the incorporation of individually owned businesses, pointing out that in addition to income tax savings, such plan made it easy for the individual to permit key employees to become financially interested, through stock ownership, in the business. By this same means, the busi-

(Please turn to page 200)



# NEWS SUMMARY OF THE MONTH

## SMWIA Resumes Publication

THE SHEET METAL WORKERS' JOURNAL recently made its reappearance as the official organ of the Sheet Metal Workers' International Association.

The *Journal* will be mailed to the membership of the union and carry official news, notices, and reports from the General Office.

The new issue is edited by James W. Close, formerly president of Local Union No. 73, Chicago, and contains illustrated articles on current topics and sheet metal craftsmanship.

## Winter-Summer Air Distribution

A NEW CO-OPERATIVE RESEARCH PROJECT to decrease the costs of combined winter heating and summer cooling installations for homes was announced recently by DEAN MELVIN L. ENGER, director of the Engineering Experiment Station in the University of Illinois.

The first activity under this project will be an investigation of improving air distribution systems for all-year air conditioning. The object will be to reduce costs without sacrificing performance. Techniques, materials, and construction methods will be studied.

This problem of using one distribution system for a year around air conditioner is complicated by the different volumes, velocities, and temperatures of air to be sent to the rooms of a home in opposite seasons.

The new co-operative project is sponsored by the American Gas Association. Work will be carried on in the Mechanical Engineering Department at the University by Stanley F. Gilman, special research assistant, under general supervision of Prof. Seichi Konzo and Prof. Ross J. Martin.

As the first step, all available published data will be studied. At the same time, laboratory research will investigate air movement in the plenum, or air distribution center, for a combined summer-winter air conditioner.

## Wholesalers Appeal for Scrap

IN A LETTER RELEASED to its membership and the trade, the National Heating Wholesalers' Association appeals to wholesalers and dealers to get behind the national drive for scrap steel and actively search for and return to scrap trade channels every possible piece of scrap steel.

The association says the position of the steel producer in the scrap market is critical. There simply is not enough scrap flowing to the mills to enable maintenance of present high levels of production. If more scrap is not made readily available and quickly, not only must production be curtailed, but the economics of scarcity will operate to force prices of scrap beyond reason and to correspondingly increase prices of finished steel.

## Construction Dollar Volume—1947

F. W. DODGE CORPORATION, a fact-finding organization for the construction industry, announced that the

dollar volume of contracts awarded in the thirty-seven states east of the Rocky Mountains last year was the highest in the nation's peacetime history. It was only 6 per cent under the all-time record of 1942, peak year of war construction, and was 4 per cent above the dollar total for 1946.

The total for building and engineering contracts in all classifications was \$7,759,868,000, compared to \$7,489,722,000 in 1946. Within the overall increase of \$270 million heavy engineering projects accounted for \$259 million while combined residential and non-residential building totaled \$11 million. Residential contracts for the year, \$3,153,773,000, exceeded the dollar volume of any previous year. However, due to the increase in prices there was a 14 per cent decline in floor area contracted for from the 1946 total.

## Aluminum Shipments

THE BUREAU OF CENSUS REPORTS totals shipments of aluminum wrought products during 1947 amounted to 1,407 million pounds, 23 per cent higher than the 1,141 million pounds shipped during 1946.

Of the 1947 total, 1,111 million pounds were plate, sheet, and strip accounting for 78 per cent of the year's shipments.

## Indoor Comfort Conference in Birmingham

LATEST METHODS IN THE DESIGN and installation of warm air heating and air conditioning equipment for homes were presented to a class of 89, attending the Indoor Comfort Conference held January 28th, 29th and 30th in Birmingham, Alabama. Included among conference attendants were heating contractors, heating equipment jobber personnel, manufacturer's representatives and city inspection department representatives from Birmingham and adjacent cities.

Under the supervision of Guy a Voorhees, application engineering director of the National Warm Air Heating and Air Condition Association, class sessions were devoted to the study of such installation subjects as: surveys; heat loss calculation; design of gravity, winter air conditioning and ceiling panel systems of warm air heating; operation of an *Indoor Comfort* system; together with discussions relatives to dealer co-ordination of engineering and sales efforts.

Indoor Comfort Conferences are being conducted in key cities of the nation under the sponsorship of the National Warm Air Heating and Air Conditioning Association as part of its nation-wide dealer training program. In cities where conferences have been held they have been accorded enthusiastic dealer reception and attendance. They are instituted for the purpose of assuring customers' enjoyment of the ultimate in satisfactory warm air heating equipment performance as well as gaining the maximum heating benefits from the fuel they are using. These objectives are particularly timely in view of the current winter severity to which most of the nation has been subjected.

## Gas Expansion Hampered by Shortages

SINCE THE TURN OF THE NATION'S ECONOMY from war-time to peace-time basis, the gas utility companies of this country have made unprecedented efforts to produce and distribute their fuel in sufficient quantities to meet the enormous demand that was foreseen even before World War II had ended, according to H. Carl Wolf, Managing Director of the American Gas Association. The fact that restrictions on new sales of gas exist in some areas, that industrial users of gas are being curtailed and in a few instances househeating by gas has been temporarily suspended during peak hours, is due primarily to shortages of materials vitally needed for the expansion of production, transmission and distribution facilities, rather than to any lack of foresight or unwillingness of utility companies to serve customers.

In 1946, the industry expended \$310,000,000 in expanding facilities Mr. Wolf pointed out. In 1947, the gas utilities had allocated more than \$1,000,000,000 for new construction, but because of shortages in materials, principally steel, actual expenditures were about \$730,000,000, which was an all-time and more than four times normal pre-war expenditures.

A dramatic illustration of the effort of the gas industry to meet its accelerating demand for gas fuel is contained in a tabulation recently made from Federal Power Commission reports. The tabulation shows that natural gas pipe line projects approved by the Federal Power Commission from July 1, 1945 to January 15, 1948, and projects pending approval on the latter date involved 20,887 miles of pipe line costing \$1,150,000,000.

Major natural gas construction authorized by the Commission up to December 1, 1947 included proposed lines of the Tennessee Gas and Transmission Company for serving West Virginia, Tennessee, Pennsylvania, Ohio, Kentucky, Indiana and New York States involving expenditures of \$83,000,000; the "Biggest" Inch line of El Paso Natural Gas Company and the Southern California Gas Company costing \$70,000,000 in its initial stages; the Michigan-Wisconsin Pipe Line Company project, costing \$52,600,000 and the Natural Gas Pipe Line Company-Texoma Natural Gas Company project for bringing additional natural gas to the Chicago area at a cost of \$43,000,000.

Projects still pending before the Federal Power Commission as of December 1, 1947 involved 16,103 miles of natural gas pipe line to cost about \$700,000,000, according to the tabulation. These projects included the proposed 1,839 mile pipe line of the Trans-Continental Gas Pipe Line Company from Mercedes, Texas to New York, N. Y., costing \$150,000,000 and the project of Tennessee Gas and Transmission Company to parallel and loop its present system with lines to Pittsburgh and to Boston, at a cost of \$150,000,000. An application of United Gas Corporation and Atlantic Gulf Gas Corporation proposes 1,530 miles of natural gas pipe line from Hattiesburg, Miss. through southern Alabama and Georgia, extending into Virginia, northern Florida and southeastern South Carolina at a cost of \$57,125,000.

The expansion of manufactured and mixed gas utilities, while not so spectacular in dollars spent or miles of main, has progressed to the fullest extent possible under material shortages now existing. Through the adaptation of improved production methods developed

under the industry's research plan, by the addition of new production facilities, wherever possible to procure materials, and by the construction of storage facilities for natural gas, propane and butane gas for mixing with base gases, the output of some manufactured and mixed gas companies has increased as much as 35 per cent in the last two years.

The gas utility companies were able to supply approximately 600,000 more customers in 1946 than in 1945. Another 600,000 customers were added to the mains in 1947. Supplies of steel and other vital materials show improvement but still lag considerably behind current demand in all industries. Natural gas reserves at the end of 1946 totaled 160.6 trillion cubic feet, a gain of 9 per cent over the previous year, despite the increased use of natural gas. Coal supplies are practically unlimited. From these data it is evident that there is no shortage of gas fuel or basic material for manufacturing gas. Given the materials for storing, transmitting and distributing its fuel, the gas industry stands ready to meet all demands.

## OHI Answers

THE OIL BURNING PUBLIC which has been continuously and hopelessly confused by reports on the fuel oil supply situation will get the straight story in *ANSWERS your questions about BURNING OILS*, a booklet prepared by Oil-Heat Institute of America, Inc.

Recognizing that it has been virtually impossible for the public to sift the conflicting hopes, suppositions, facts and figures and acquire a considered opinion of its own on fuel oil supply, OHI has assembled in question and answer form, the incontestable truths that apply, beginning with crude reserves and tracing through to the delivery of refined product to users.

A. E. Hess, managing director of OHI, said as the first 200,000 copies of *ANSWERS* came off the presses, "If interested officials in government and the oil industry had agreed on the extent of the fuel oil shortage and the reasons for it, the oil burner industry as represented by OHI would not have been compelled to bring these facts to the attention of the public."

"It is regrettable," continued Mr. Hess, "that the thoughtful, accurate comments of a few top executives in the oil industry were buried by the avalanche of generalized, and frequently inaccurate comments on the subject. It is in the public's own best interests that their impressions on this vital topic be removed from the category of uninformed opinion. *ANSWERS* quotes only from industry and government sources generally recognized as reliable. These same facts and figures which add up to an adequate future crude supply, improving refinery output and increasing transport facilities have always been available.

*ANSWERS* will be distributed to the oil burning public by members of OHI and all others in the industry who feel that the 40,000,000 people wholly or partly dependent on oil for heat, and 10,750,000 waiting for oil heat in 1948, have a right to know where they stand.

Copies of *ANSWERS* will be furnished in lots of more than 100 at cost—two and one-half to three and one-half cents each depending on quantity ordered—to anyone who desires copies for distribution to the public. A sample booklet and order form can be secured from OHI headquarters.

# An Apprenticeship In Warm Air Heating

Harry L. Fitch  
Fitch Heating Service, Inc.  
Rochester, N. Y.

## FOREWARD

*These Standards of Apprenticeship, developed by Fitch Heating Service, Inc. have as their objective the training of skilled mechanics in Warm Air Heating. It has been recognized by this company that to train skilled mechanics there must be a well developed plan of work experience, supplemented with related instruction. This recognition has resulted in the development of this Apprenticeship Program in accordance with the Standards recommended by the New York State Apprenticeship Council.*

*It is the desire of the company to co-operate with all who are interested in the training of apprentices, in an effort to assure the apprentice, if he will apply himself to the learning of the trade, the opportunity to become a highly skilled craftsman.*

## SECTION 1 Definitions

(a) "Apprentice shall mean a person at least 18 years of age, who has agreed to work at and learn the trade of Warm Air Heating, and who is covered by a written agreement with the employer.

(b) "Employer" shall mean Fitch Heating Service, Inc., who signify their desire to train apprentices in conformity with these Standards of Apprenticeship and to become a participant and party to these Standards.

(c) "The Registration Agency" shall mean the New York State Apprenticeship Council.

(d) "Supervisor of Apprentices" shall mean the person designated by the employer to perform the duties outlined in these Standards.

(e) "Apprenticeship Agreement" shall mean a written agreement between the employer and the person employed as an apprentice, which agreement shall be registered with the Registration Agency and shall contain a statement covering the terms and conditions of the employment and training; a statement of the trade to be learned; a schedule of the work processes;

a requirement that the apprentice receive supplemental instruction in subjects related to his trade for at least 144 hours a year for each year of his apprenticeship; and a clause making all the terms and conditions of these Standards a part of each Apprenticeship Agreement with the same force and effect as if expressly written therein. Every apprenticeship agreement shall be made out and signed in triplicate; one copy for the Employer; one copy for the Apprentice; and one copy for the Registration Agency.

(f) "Parties to the Apprenticeship Agreement" shall mean the apprentice (and his parent or guardian, if he is a minor) and a duly authorized representative of the employer; each of whom shall be required to sign the Apprenticeship Agreement.

(g) "Standards of Apprenticeship" shall mean this entire document, including these definitions. These Standards and definitions have been developed in accordance with the recommendations of, and will be registered with, the New York State Apprenticeship Council.

## SECTION 2 Policy

On and after the date of the signing of these Standards it shall be the policy of Fitch Heating Service, Inc. that all apprentices are to be employed in accordance with the terms of these Standards of Apprenticeship.

## SECTION 3 Qualifications for Apprentices

Applicants for Apprenticeship must meet the employment requirements of the company and be:

1. Between 18 and 30 years of age.  
Exceptions to age limit may be made in the case of Veterans of World War II.
2. Graduate of a high school, or have the equivalent in education.
3. Physically able to perform the work of the trade.
4. Preference will be given honorably discharged veterans of World War II.

## SECTION 4 Term of Apprenticeship

Apprenticeship is offered in the trade listed below



and for the term as stated:

(Trade) Warm Air Heating, 6,000 hours

During the term of apprenticeship all apprentices are required to receive supplemental instruction in subjects related to their trade for a minimum of 144 hours per year. For all purposes under these Standards, 2000 hours shall be considered as equivalent to one year.

## SECTION 5

### Probationary Period

The first 1000 hours, or approximately 6 months after the signing of the Apprenticeship Agreement, shall be a probationary period. During this probationary period, the Apprentice Agreement may be cancelled by the Registration Agency, upon written request of either party. After the probationary period, the Agreement may be cancelled by the Registration Agency upon the written request of both parties thereto or upon adequate cause being shown by either party.

## SECTION 6

### Credit for Previous Work Experience and Education

All persons now employed as apprentices will be placed under these Standards. Credit on the term of apprenticeship for previous work Experience and Education may be granted an old or new employee, if, after a careful examination of his Work Experience, education and other qualifications, such qualifications are found to meet the requirements of this program for such advanced standing. Such credits as may be granted shall be set forth in the Apprenticeship Agreement.

### Credit for Previous Work Experience and Education

Apprentices who are granted credit for previous experience shall be paid, upon signing the Apprenticeship Agreement, the wage rate for the period to which such credit advances them.

## SECTION 7

### Hours of Work

Apprentices shall work the same hours and be subject to the same conditions as the skilled workers in their trade who are employed by the company. In case an apprentice is required to work overtime, he will receive credit on the term of apprenticeship for only the actual hours worked. Apprentices will not be required to work overtime on days when classes in related instruction are scheduled.

## SECTION 8

### Supervisor of Apprentices

The Company shall designate a Supervisor of Apprentices who may be a foreman or journeyman in warm air heating.

It shall be the duty of the Supervisor of Apprentices:

- (a) To see that apprentices are moved through the work training processes that are set up in these Standards;
- (b) To see that no apprentice is retained on an operation for a period longer than the time scheduled;

- (c) To maintain a record of all apprentices showing the distribution of time on the various work processes, the progress made in such work process, and the aptitude he displays;
- (d) To review the record of the apprentice's attendance in classes of related instruction from reports received from the Board of Education;
- (e) To co-operate with everyone concerned in aiding the apprentice in mastering the trade.
- (f) To see that an Apprenticeship Agreement is executed before the apprentice begins work.

## SECTION 9

### Records

Adequate records shall be maintained for all apprentices, showing the distribution of time on the various work processes; the progress made in each work process, and the aptitude displayed by the apprentice; together with a report of attendance at the progress in classes of related instruction.

For this purpose, record cards may be obtained from the Registration Agency, without cost. These record cards include a one-year work and supplemental instruction record book furnished the apprentice, in which he will keep a daily record of hours worked on each type of operation of his trade. The foreman will verify these entries by initialing. At the end of each month the foreman will rate the apprentice's performance for the month. At the end of each month of related instruction, the instructor will record, in this book, the apprentice's progress in related supplemental work.

On the Apprentice Master Record Card, supplied at no cost with the above one-year record book, a summary of each month's record of the Apprentice's progress in the shop and supplemental instruction is posted, from the one-year record book, and is kept by the company.

## SECTION 10

### Apprenticeship Agreement

Three copies of every Apprenticeship Agreement shall be made out, signed and forwarded to the Registration Agency for approval and registration. When registered, the company and the apprentice each receives one copy, while one copy is retained for the files of the Registration Agency.

Every apprenticeship Agreement entered into under these Standards of Apprenticeship shall contain a clause making the standards a part of the agreement, with the same effect as if expressly written therein. For this reason, every applicant, (and his parent or guardian, if he is a minor), shall be given an opportunity to read these Standards of Apprenticeship before he signs the Apprenticeship Agreement.

## SECTION 11

### Ratio or Number of Apprentices

One apprentice shall be allowed to the shop and one to every two additional journeymen regularly employed in the trade by the employer.

## SECTION 12

### Wages

Apprentices shall be paid not less than the following minimum rates per hour:

1st 1000 hours or approx. 6 months.....	\$ .75 per hour
2nd 1000 hours or approx. 6 months.....	.90 per hour
3rd 1000 hours or approx. 6 months.....	1.00 per hour
4th 1000 hours or approx. 6 months.....	1.10 per hour
5th 1000 hours or approx. 6 months.....	1.25 per hour
6th 1000 hours or approx. 6 months.....	1.50 per hour

Minimum journeyman's rate as of August 15, 1946 is \$1.65 per hour.

## SECTION 13

### Work Experience

Apprentices shall receive instruction and experience on the machine and processes listed in the attached Appendix A. It is understood that they shall be given a sufficient variety of experience and instruction in all branches of their trade to develop practical, skilled, all-round mechanics.

The schedule of work experience established therein shall be recognized as sufficiently flexible to be changed if the accumulated experience indicates that a change will be to the advantage of the apprenticeship system or if the work of the employer requires that a change be made.

## SECTION 14

### Related Supplemental Instruction

(a) All apprentices shall be required to attend classroom instruction in subjects related to their trade for a minimum of 144 hours per year during each year of the term of apprenticeship. The schedule of class hours should average 4 hours per week, 36 weeks per year. Apprentices shall not be paid for the hours spent in classes of related instruction, and this time spent in related instruction shall not be considered as hours of work.

(b) In case of failure on the part of any apprentice to fulfill his obligations as to school attendance, the New York State Apprenticeship Council may suspend or revoke his agreement upon notification by the employer of such conditions.

(c) When related work of the apprentice is not of the calibre necessary to proficiency relative to the trade being followed, such deficiency will be called to the attention of the employer and/or the joint Apprenticeship Committee or by the school authorities carrying on the related work.

(d) The classes of related instruction shall be arranged for by the New York State Education Department in cooperation with the local school authorities and when established shall be under the supervision of the local school authorities.

(e) The course content of the related instruction shall be determined by representatives of the plant in conjunction with the New York State Education Department and the local school authorities.

(f) The related classroom instruction shall cover the following subjects:

Blueprint Reading Elementary

Measurement and Layout  
Fundamentals of Mathematics  
Materials of the Trade  
Theory and Science related to:

Hand Processes  
Machine Processes  
Layout and Installation  
Business Management  
Industrial History and Labor Problems  
Courses in Safety

Such other courses as related to the trade.

(g) The amount of time to be devoted to each subject and the sequence they are to follow will depend upon the type of work being performed by the apprentice in the plant. It is intended that this classroom instruction shall be so integrated with the work in the plant that the apprentice and the company shall receive the maximum benefits from each instruction.

## SECTION 15

### Transfer of Apprentices

If the employer is unable to fulfill his obligations under the Apprenticeship Agreement, he will use his best endeavors to transfer the apprentice to a like program in another establishment. The Registration Agency shall be notified of all such transfers.

## SECTION 16

### Consultation Service on Apprenticeship Problems

Should a question arise as to the interpretation of these Standards, which cannot be satisfactorily settled between the apprentice and the company, either party may consult with the Registration Agency.

## SECTION 17

### Certificate of Completion

Upon the satisfactory completion of the requirements of Apprenticeship as established herein, the company shall certify the names of graduate apprentices to the Registration Agency and recommend that a Certificate of Completion of Apprenticeship be awarded by the New York State Apprenticeship Council.

## SECTION 18

### Modification of Standards

These Standards of Apprenticeship, which shall be registered with the New York State Apprenticeship Council, may be revised or modified at any time, provided that no such change shall alter an Apprenticeship Agreement in force at the time of such change without the written consent of the apprentice. The Registration Agency shall be advised of any and all such changes.

## Appendix A

1st—1000 hours, or approximately 6 months, Gravity Furnace Installation.

- (a) Methods of setting furnaces.
- (b) Assembly and Casing of furnaces.

(Please turn to page 204)

# For Sale— One Heating Contractor

David Markstein  
New Orleans, La.

An established business has responsibilities toward the community which supports it. Here they are discussed and analyzed for self-help.

**W**HY is it that the heating contractor who does the best work, offers good service and prices that are strictly competitive—in short, the contractor who has the most to offer the customer—sometimes makes a bare profit, while a competitor down the street, whose work and service may be inferior, prospers greatly? Situations like this occur frequently. And when they do, it is a dollars to dimes bet that the heating contractor who packs the customers despite the fact that he offers less, is an expert in selling himself to the customer.

It is not enough to do the best work. Nor is it enough—if you're aiming for a booming business—to offer the best service, even at competitive or cutthroat prices. Mr. Customer, unfortunately, buys at the place he likes. His likes are founded to some extent on the kind of work he buys. But to a greater extent his liking for a particular company stems from his liking for its owner.

## ***Building Personal Reputation***

Selling *yourself* to the customer is an important part of selling your work. Just as merchandise salesmen are made as well as born, so are salesmen who know how to sell themselves. It's not hard to learn. The first thing is to create a personality. This sounds complicated, but it is not. The aim is to build a reputation, a character, a personality that customers will like—and to make it a well-known personality. It is not necessary to make over your ways and your whims. This sort of personality can be created out of a few tricks that are easy to master.

## ***Friendliness Is Key***

The outstanding feature of the personality you want to create must be friendliness. Humans all tend to like the guy who likes them, and makes his liking apparent. So the first thing is to *be friendly*. Being friendly does not call for hearty slap-on-the-back tactics with everyone you meet. Nor does genuine friendliness consist only of a grin and a false handshake for the people with whom you come in contact. Friendliness must be felt from the heart. You must truly like people. If you have never made it your business to carry a heart on your sleeve for every Tom, Dick, and Joe, don't let that worry you. If you're the guy who can genuinely like only the qualities he admires, you already have the personality for building friendliness between yourself and your customers. All

A willingness to work for civic improvement will always return dividends.





you have to do is look about you and you'll find things to like about the people you meet. Everyone, even the worst of us, has some likeable quality. No person is all bad, or all obnoxious. So if you look for the likeable things about every person you meet, and such good qualities can be found, you will find yourself slipping naturally into a friendly attitude.

### **Know Your Prospects**

Of course, you have to work at it too, in addition to simply finding things to like about your customers. The smart business man tries to know every customer, by name if possible, and to greet him personally with a "Good morning, Mr. Jones," whenever they meet. A friendly attitude toward people is the first requisite for selling yourself. There are other things, mechanical tricks which you can practice, that help to create a friendly personality whom everyone likes and from whom a great number buy.

One of the things you can do to demonstrate your good will toward the customer is to help him get maximum benefit from the work you sell him. The average heating contractor contents himself with making a sale, says "Thank you," and is through with Mr. Customer until the time to make another sale. More constructive thinking would be to help the customer enjoy what you have already sold him. Then he will think of you first—as the friendly heating contractor who went out of his way to help.

Simple? Yes. But often overlooked.

One heating and sheet metal contractor sends congratulatory letters out to all newly-weds, to couples on their anniversaries, and to mothers of new-born babies. He picks the names from the society pages, and vital statistics columns of his morning newspaper, so the cost of finding addressees is low. The letters are simple and chatty. They exude good cheer and good will. In them, he makes no effort to sell anything—*except himself.*

### **Results Will Come**

The results, he reports, have been excellent. "By selling myself to these potential customers as a friendly guy who genuinely wishes them well and rejoices in their joy, I've brought in a tremendous volume of new business. It doesn't cost me a lot. The letters are forms, which I have filled in with the name and address by a good secretary who can do a matching job. The names are simple to find. The postage is low, so for peanuts I have a very effective method of selling myself to the customer." Another sure-fire way to sell yourself as a right guy (and in the process, sell your company and your work) is to be a civic-minded joiner of clubs and leader of drives.

### **Cultivate Civic Responsibility**

Being civic-minded pays off in a number of ways. First, it gets your name into the newspapers and into word of mouth discussions. It sells you as a man who cares sufficiently about his town and his fellow citizens to put his time and money into working for the things that are needed. Next, it brings you into contact with civic leaders. These men often influence the buying of many others, as do leaders in every field. The heating contractor for whom Joe Blow, president of the

Exchange Club, buys is very likely to be patronized by lesser civic lights because of the great Mr. Blow's custom.

In addition to civic leaders, the lesser lights with whom you come in contact can be sold on you—and, in the process, on your company—through the civic work you do. The members of civic clubs usually total a sizeable body of potential customers.

"Sponsoring" events can be a powerful tool for selling yourself to the public. Some contractors have gone so far as to sponsor special sporting events. Others have sponsored softball, basketball and other semi-professional teams. Still others sponsor less expensive events, such as club meetings (providing a few drinks or a spread on the house), dances and get-togethers. The list of sponsorship possibilities is endless. Furthermore, with such large-scale things as sports events, sponsorship pays off in a flood of publicity that helps tremendously to sell yourself to possible customers.

If you have any spare space, donate it to civic drives. This will earn you the applause of almost every citizen, and help to make him think that, "This man must be a pretty right guy. He gives his space freely to important things such as the Community Chest." Similarly, donating advertising space to these drives can help to identify you as a public-spirited citizen and a man from whom it is a pleasure to buy. Helping with all kinds of charity drives is one more effective means for selling yourself to the customer. The time you donate to serving on charitable boards and helping along charity collection campaigns pays off by public acceptance as a friendly personality.

Do plenty of favors. Don't be afraid to go out of your way to help the customer, even if he's a one-time buyer of small amounts. He'll be back. They always come back to visit the business man who demonstrates his genuine friendship. Here is a trick that many very successful salesmen have found effective: Have the customer do *you* a favor. Ask him for some small thing, a favor that will take practically no effort. You'll find this almost an unfailing friendship-builder.

### **Home-Spun Advertising**

Another way to sell the idea of a friendly personality is to personalize your advertising. Instead of advertising specials from Jones' Heating Company, advertise them as "Harry Jones' special." In all of your advertising efforts, use your own name. Write chatty, personal copy that the reader can picture as coming from a good friend. One heating contractor used this idea to advantage by running a weekly column devoted to advice on how to do simple jobs about the house. They appeared weekly in the daily newspaper of his community. Each ad was signed with a facsimile of his signature. The copy style was somewhere between a column and that of a friendly letter. Each ad dealt with a problem that most people find themselves faced with about the house, and told how to do the job in jig time.

The result was not only a high readership for the advertisements, but an excellent reader-identification of the contractor's name. He soon became a fairly well-known character in his community. People dropped in to find out how to fix a crack in the wall, (Please turn to page 208)



# RESIDENTIAL AIR CONDITIONING *Section*

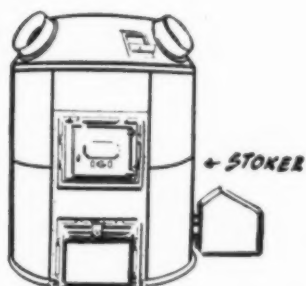
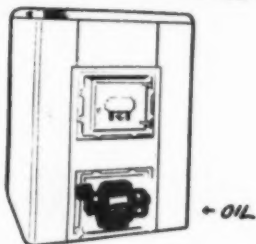
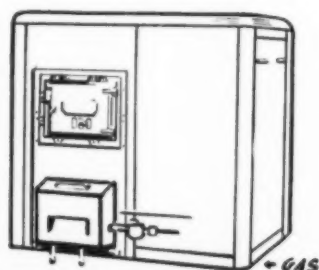
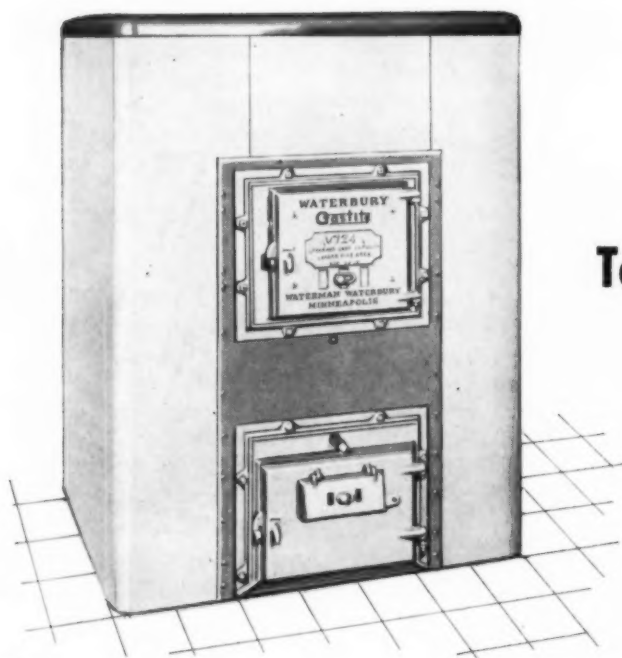
DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



# Adaptable to ANY Fuel

**The  
700 Series**

**To Meet  
Today's Problem**



# Waterbury

700 Series Coal-Fired Units are made in both round and square gravity models and in a complete winter air-conditioner. All of these units are equipped with the famous Waterbury Gas Tight body—and they convert easily to oil, gas or stoker. As coal-fired units, or converted, they live up to Waterbury's standards of efficiency.

*It's What's Under the Casing that Counts!*

**THE WATERMAN - WATERBURY COMPANY**  
1122 JACKSON ST. N. E. **MINNEAPOLIS 13, MINN.**

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# Survey and Sell

N. A. PALMER, Special Application Engineer,  
Williams Oil-O-Matic Division



A combination of rather complicated circumstances has brought about a situation in the oil heating industry that demands a great deal of initiative to keep the heating business at a high level. There is agitation in the legislative branch of the government for action to halt the installation of oil burning equipment—for any purpose—and the Department of Interior has continually voiced a pitiful plea that the country will find it impossible to continue unless that department is empowered to ration petroleum products. At a convention of the American Petroleum Institute, a representative of the Interior Department spoke of rationing as a last resort, but it was hardly a month later that the time for the last resort arrived, in their opinion.

With all these varying pressures and propaganda, the sales of oil burning heating systems are likely to be seriously affected. But there is one large and profitable market that the heating contractor can approach with the knowledge that he will be doing a needed sales job and conserving vital fuel oil. That is the *replacement market*. It has been estimated that there are 350,000 oil burning installations in this country that can be replaced, right now. Obviously, then, this market not only makes it possible that a large number of new burners can be sold to replace old, inefficient high-consumption burners but the resulting cut in fuel consumption would, in turn, make it possible to sell 350,000 new oil heating installations. And yet no additional load would fall on the existing refinery capacity.

Mayors of the twin cities of Champaign and Urbana, Illinois, helped start off Oil-O-Matic's fuel saving survey. George F. Hurd, Mayor of Urbana (left) and Major George Babb of Champaign (right) watch as W. A. Matheson, Executive Vice President of Eureka Williams Corporation, demonstrates a CO<sub>2</sub> checking device used in the home surveys.



*Repair*

*Replace*

*Rebuild*

*Oil*

*Heating*

*Equipment*

*Now!*

*Save*

*Vital*

*Fuel*



Results of the "Campaign In Champaign" being tabulated.

The existence of this ready market for oil burner replacement was well-known to executives at Williams Oil-O-Matic, as to all others who keep informed of the trend of events in oil heating. W. A. Matheson, executive vice president of the Williams Oil-O-Matic Division, was in search of an effective means to tap this market. Always a firm believer in the heating survey as a sales tool, Mr. Matheson thought that the present situation called for just such an instrument as the survey, but it needed some additional impetus to make it universally effective. The motive for the survey had to be basically sound, timely and appealing to the temperament of the oft-times, harshly treated users of oil heat.

Another angle of the home heating situation was the fact that, in spite of the many scientific and miraculous marvels of the present age, many home owners are completely at sea when it comes to understanding the heating plant in their basement. Thus, pleas for voluntary fuel conservation have often fallen on deaf ears since the home-owner has no great inclination to set that thermostat below 70 and will not attempt any adjustment of his heating system, himself, and hesitates to call in a contractor in fear of being subjected to

a high pressure attempt to sell new equipment that might or might not be necessary. Positive that a great deal could be accomplished by an effectively conducted fuel conservation survey, Mr. Matheson was sure that it was not essential to force the owner of an oil heated home to depend on a sweater for warmth rather than his heating plant.

These concepts were then evolved into the idea for the "Campaign in Champaign" on Friday, Jan. 16, which saw seventy Oil-O-Matic dealers, distributors and factory officials descend on Champaign, Urbana and Rantoul, Illinois, equipped with fuel conservation kits

that contained a CO<sub>2</sub> tester, draft gauge and stack thermometer.

### Publicity

The Champaign newspaper carried a story on the survey, on the evening before it was scheduled to take place and emphasized the importance of this campaign to check heating plant efficiency and heat loss conditions that could be corrected in the move to save vital fuel oil. As a result of the interest in economy and the favorable publicity, 61 per cent of all calls resulted in interviews and 82 per cent of interviews resulted in surveys. Add to this the fact that 87 per cent of the burners inspected were found to need adjustment, repair or replacement and the value of the survey can be readily seen.

### How to Do It

With the value of the heating survey established the question arises as to the proper technique for making this survey. The heating plant is the heart of the heating system and the proper way to determine the efficiency of the plant is by the use of instruments. It is impossible to gauge the performance of a heating plant by any rules of thumb or casual inspection. Instruments must be used if any worthwhile and accurate results are to be obtained.

The efficiency and economy of an oil heat installation depend, to a great extent, on the coordinated performance of:

1. The furnace
2. A properly proportioned combustion chamber
3. The burner
4. Controlled draft

### OVERHEATING IS A WASTE

This table shows how much fuel can be wasted when the thermostat is set at 75 or 80 degrees F.

Average Yearly Requirements in Gallons at	Oil Wasted Yearly Due to Thermostat Settings of	
	75° F.	80° F.
70° F.		
1,000	142 gals.	284 gals.
1,500	214 gals.	428 gals.
2,000	286 gals.	572 gals.
2,500	357 gals.	714 gals.
3,000	428 gals.	856 gals.

**The Furnace.** Does the furnace have enough capacity for the heating load? (Does heat reach all registers?)

Are ashpit damper and door and feed door tightly fitted? Air leaks at these points are fuel wasters.

Is the furnace heat exchanger free of accumulated soot and scale? A  $\frac{1}{8}$  inch soot deposit can increase oil consumption as much as 10%.

**Combustion Chamber.** Is the combustion chamber in good condition? Is it of correct size and design?

Oversized, undersized, cracked or broken combustion chambers waste fuel.

Insulation, placed under the combustion chamber floor is an oil-saver. Insulation will also save fuel when placed between the outside walls of the chamber and the inside of the fire box.

Savings up to 10% can often be made by replacing an old style combustion chamber with one built from newer type of refractories, according to modern practice.

**The Burner.** The oil valve must shut off as soon as the burner. If it doesn't fuel is wasted.

Ignition electrodes should be cleaned and adjusted periodically. Sluggish ignition can waste fuel.

Burner should always be adjusted for the grade of oil used. A change in grade of oil requires a change in burner adjustment.

Check for oil leaks, i.e., burner, oil lines and fittings, tank, and fill pipe.

Clean nozzles and filters regularly. Erosion at the nozzle orifice or dirt in a swirl chamber may cause as much as a 75 per cent increase in fuel oil consumption. *An approved*

Carbon Dioxide (CO <sub>2</sub> )	NET STACK TEMPERATURE*							
	300	400	500	600	700	800	900	1000
	PER CENT OF HEAT LOSS							
Per Cent								
15.0	10.7	12.7	14.8	16.8	18.8	20.8	22.8	24.8
14.5	10.9	12.9	15.0	17.1	19.2	21.2	23.3	25.2
14.0	11.0	13.1	15.3	17.4	19.5	21.6	23.8	25.7
13.5	11.1	13.4	15.6	17.7	20.0	22.0	24.3	26.4
13.0	11.3	13.5	15.8	18.1	20.5	22.5	24.9	27.0
12.5	11.5	13.8	16.2	18.4	20.7	23.1	25.5	27.8
12.0	11.6	14.0	16.5	18.8	21.4	23.7	26.2	28.6
11.5	11.8	14.4	16.8	19.3	22.0	24.3	26.9	29.5
11.0	12.1	14.7	17.3	19.8	22.6	25.1	27.8	30.5
10.5	12.4	15.0	17.8	20.5	23.3	25.8	28.8	31.5
10.0	12.6	15.4	18.3	21.2	24.0	26.8	29.7	32.6
9.5	12.9	15.7	18.8	21.8	24.8	27.8	30.8	33.8
9.0	13.3	16.3	19.4	22.6	25.8	28.8	32.0	35.2
8.5	13.6	16.8	20.1	23.5	26.8	30.0	33.5	36.8
8.0	14.0	17.5	20.9	24.5	28.0	31.5	35.0	38.5
7.5	14.5	18.3	21.8	25.5	29.3	33.0	36.8	40.5
7.0	15.1	18.9	22.9	26.8	30.8	34.8	38.8	42.5
6.5	15.7	19.8	24.0	28.2	32.3	36.7	41.0	45.0
6.0	16.5	20.8	25.5	29.8	34.3	39.0	43.4	47.9
5.5	17.3	22.2	27.0	32.0	36.7	41.5	46.5	51.3
5.0	18.3	23.6	29.0	34.3	38.6	45.0	50.2	55.4
4.5	19.5	25.5	31.4	37.3	43.2	49.0	54.8	60.3
4.0	21.1	27.6	34.2	40.7	47.4	53.7	60.5	67.0

\*Net Stack Temperature is the stack temperature reading minus the temperature of the basement near the heating plant.

*type of draft regulator* will increase the operating economy of any heating plant, regardless of the kind of fuel burned. This balanced damper device, usually placed in the smoke pipe, operates to maintain a nearly constant draft over the fire regardless of variations in the chimney pressures due to backdrafts, wind gusts, and the like.

**Common causes of poor draft are:**

1. Improper construction of chimney (flue should be straight without offset; a lined flue of large cross section area is advisable).
2. Proximity of the chimney to some wind deflecting surface such as a roof gable, nearby building, etc.
3. Leakage of air into the chimney.
4. Inadequate ventilation in the furnace room.

5. Chimney of insufficient size.

6. Openings in chimney for other equipment (A heating plant should always have a separate flue; openings in the chimney for gas ranges, fireplaces, water heaters, laundry stoves, etc., act as a check damper).

### The Chemistry of Burning Oil

To understand the combustion process of petroleum, we will discuss the elements involved and describe the chemical changes which take place.

Oil is a Hydrocarbon, i.e. it contains approximately 85% carbon (C), and 15% Hydrogen (H). Other elements are present in minute quantities, but play no part in the combustion and therefore will be disregarded.

Air contains 21% Oxygen (O<sub>2</sub>) and 79% Nitrogen (N). The Nitrogen is an inert gas and passes through the combustion process without chemical change.

When oil and air are mixed together and the temperature raised to the point of ignition by an electric spark, a flame is established. If the proportions of oil and air are correct, all of the carbon will combine with oxygen and form carbon dioxide (CO<sub>2</sub>) and all of the hydrogen will combine with oxygen forming H<sub>2</sub>O or water. This water, in the form of steam, or vapor, gives off some heat while passing through the boiler or furnace, yet emerges from the chimney as vapor. If, however, not enough air is provided, only a part of the carbon can combine. (Please turn to page 186)

### LOWER NIGHT TEMPERATURES SAVE FUEL

This table shows savings made possible by lowering night temperature from the daytime level of 70° F.

Lowered Night Temp.	Per Cent Savings in Oil When Thermostat Is Lowered at Night for a Period of:			
°F.	4 hrs.	8 hrs.	12 hrs.	16 hrs.
70	0	0	0	0
65	2½ %	5 %	7½ %	9½ %
60	5 %	9½ %	14½ %	19½ %
55	7½ %	14½ %	21½ %	28½ %
50	9½ %	19½ %	28½ %	38½ %





# Wood & Relative Humidity

W. LeRoy Neubrech, B.S., M.F.

N. Y. State College of Forestry

“OFF again, on again, gone again Finnigan!” We all recall that old story about the “efficient” railroadman, and his reports on train wrecks along his line. Today—most home owners might well adopt a similar, new expression, such as: “out again, in again, gone again moisture!”, because that is exactly what is going on, in the wood structure and wood products in most homes today. We say “most” homes—because comparatively few home owners have yet realized the importance of air-conditioning and the role it plays in controlling relative humidity, which may be said to be a most important “enemy” of many products in our homes—to say nothing of the structure itself. When we buy a brand new home which has just been completed, with its beautiful hardwood flooring and trim, its smooth unblemished plastered walls, its wooden doors and windows that fit just right, its beau-

tiful wooden staircase, why don't they stay that way for years to come? *The answer is largely determined by relative humidity.* Or when we buy a new walnut baby grand piano with its exquisite tone and beauty made possible by the use of wood, or when we buy a new mahogany Chippendale chair or a new birds-eye maple bedroom suite, why do not they hold their beauty and utility into eternity? Outside of actually wearing out they undoubtedly would—but the answer is again—relative humidity.

## The Cause of Damage In Our Homes

And we ask—what has relative humidity got to do with our homes and household articles built of wood? Just this—wood shrinks and swells in accordance with its moisture content and a change in the moisture content of wood depends upon the relative humidity. As a matter of fact there is a definite relationship between the atmospheric conditions in our homes and

<sup>1</sup>“Dry Air Causes Huge Damage to Antiques”—Holland Institute of Thermology, Holland, Mich.

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the moisture content of wood exposed to it. Briefly, the more moisture in the air the higher will be the moisture content of the wood. And it doesn't take an engineer to figure out that when alternate shrinkage and swelling goes on in the structure of our wooden homes and in the almost innumerable household articles made of wood—expensive and oftentimes irreplaceable damage is done. One splendid example might be offered at this time which illustrates this point to perfection. The source of many priceless pieces of antique wood furniture is Western Europe where they have been kept for centuries or more in buildings where heating systems are none too efficient, with the result that the relative humidity was fairly high and remained more or less constant the year around. When brought to America for exhibit or use in our so-called "modern" heated buildings or homes where the air oftentimes approaches a bone dry condition due to lack of artificial humidification during the heating season, the result has been opening up of joints, veneer shrinkage and warping from its base, or the pieces themselves twisting and warping. It has been estimated by antiquarians that valuable antiques are damaged to the extent of hundreds of thousands of dollars from the above conditions.<sup>1</sup>

#### **Should Materials Other Than Wood Be Favored?**

The question which undoubtedly arises in most readers' minds at about this point is—why not use materials other than wood which do not have this property of shrinkage and swelling in accordance with the relative humidity of the air? To such a seemingly simple solution a lengthy treatise could be written showing the many advantages of wood as compared with its disadvantages. Why do so many products today, made of materials other than wood, copy the grain and color of natural wood finishes? It's not necessarily because we have been accustomed to just seeing wood in our daily life for untold centuries, but because we have become appreciative of its intrinsic value. When we look upon our new walnut radio cabinet we see, to be sure, beautifully figured and matched wood, truly an artistic piece of furniture. But when we touch it, it does not feel cold and hard, it does not "bang" if we happen to hit it by accident, nor does it dent. Should it become scarred, usually a little furniture polish and wax will cover up the damage, but if the damage is serious, it can easily be repaired by a cabinet craftsman, or even in many instances by the man of the house. The many desirable properties of wood go into one real intrinsic characteristic which is difficult to describe but which we might well term "liveableness." Many of our modern substitutes for wood fail miserably in this respect. Wood as a building material possesses five characteristics which make it pre-eminent: strength, lightness, workability, high thermal insulation, and accessibility.

#### **The "Cost of Comfort" In Our Homes**

Considering house construction, we find today some homes being built entirely of products other than wood. While many of these products may or may not be subject to changes in dimensions from moisture, some, it is true, do change dimensions from changes

in temperatures. However, to many of us one very important feature is the "cost of comfort" in a well built, attractive, and liveable home. It has been shown by construction cost data, (1) based upon interest on the cost of construction, (2) interest and depreciation on the cost of heating plant necessary to offset heat losses, and (3) cost of fuel necessary to offset heat losses, that the annual "cost of comfort" for standard lumber construction with  $\frac{1}{2}$  inch flexible insulation between studs is the lowest of 22 types of walls considered. In fact it is shown that the annual "cost of comfort" for standard lumber construction as indicated above, is less than one-half the cost of several other types of wall construction.<sup>1</sup>

#### **The Properties of Wood—How It Dries**

Wood in a living tree has associated with it considerable quantities of water, usually sufficient to cause it to appear wet. The percentage of moisture in fresh-



Testing the moisture content of lumber

ly cut lumber ranges from 40 to 250 per cent for most of the commercially important species of wood, based upon its oven dry weight. After wood is cut into lumber or other usable forms or during conversion it is usually dried so that the wetness is not evident, although appreciable quantities of water remain—usually varying from 5 to 12 per cent for products to be used indoors and in house construction.

Moisture in wood occurs in two distinct forms, usually termed "free" water and "imbibed" water. The free water is found inside the individual cells of the wood while the imbibed water is that absorbed by the cell

(Please turn to page 218)

<sup>1</sup>Revised Table from "The Cost of Comfort" prepared by the National Lumber Manufacturers Ass'n, Wash., D. C., showing the "Annual Cost of Comfort—According to Type of Wall."

## THE COLEMAN CONDENSED METHOD

Quantities of heat are measured in units called British Thermal Units (abbreviated Btu). The amount of heat in a Btu is easy to visualize if you put a pint of water (one pound) in a pan and heat it. For each degree increase, one Btu has been added. In other words, a Btu is the amount of heat that will raise the temperature of a pound of water one degree.

Heat is lost from a warm building through all of its surfaces exposed to lower temperature. This is called "transmission losses." Heat is also lost due to wind blowing through cracks around windows and doors. This is called "infiltration losses." Total heat loss of a building is the sum of transmission losses plus infiltration losses.

The first step is to find how much heat is lost by transmission. Calculate the areas in square feet of all exposed surfaces of the room or building including:

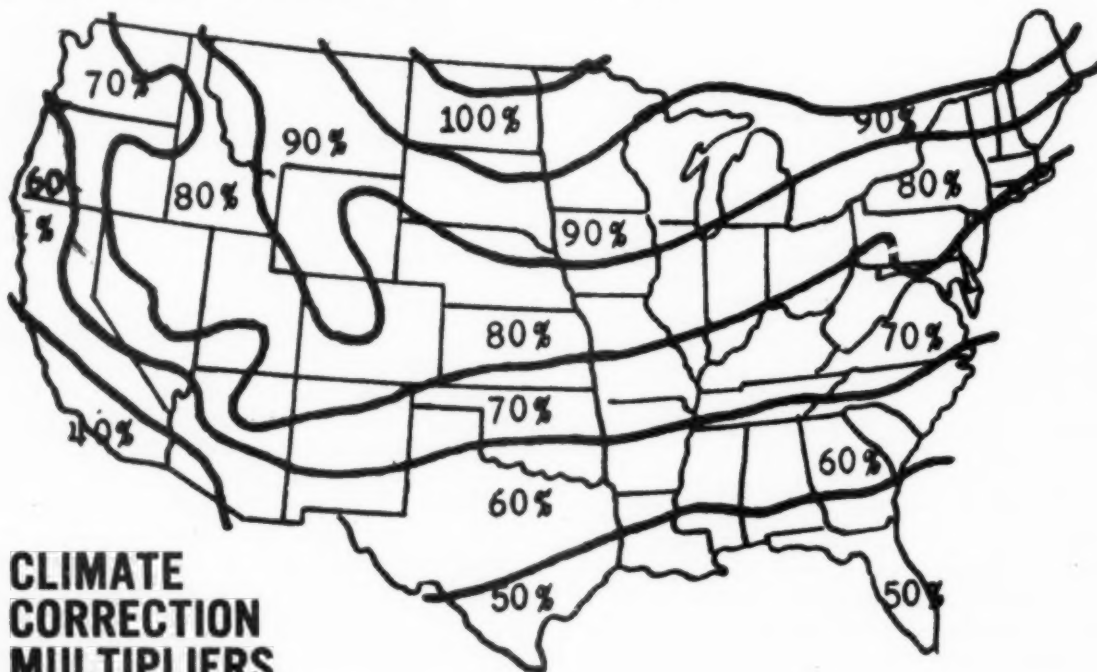
1. Window and outside door area (combined).
2. Net outside wall (gross wall area minus item 1).
3. Ceiling area (below unheated room or attic space). Inside walls adjacent unheated rooms.
4. Floor area (if space below floor is not heated).

Each of the above areas should then be multiplied by the proper factor from one of the "Condensed Method" tables.

**B** Next, estimate infiltration losses. This depends on the amount of cold air blown into the house, which is in turn dependent on the size of the window or door and the width of the crack around it. Simply multiply the area of windows and doors already calculated in Step A by the infiltration factor selected from Table 5. Also, since there is more air leakage through door cracks than through window cracks allow an additional 1000 Btu for each outside door. Add 3000 Btu for each fireplace.

**C** Add the infiltration losses (Step B) and the transmission losses through the windows, walls, etc. (Step A) all together. The sum is the heat that would be lost from the room or building—if the temperature difference between inside and outside were 100°. In other words, this is the amount of heat it takes to maintain 70° inside when the outside temperature is 30° below zero, which would occur only in the very coldest sections of the United States.

**D** Heating requirements are naturally less where the weather does not get so cold. The average minimum temperature in Dallas, Texas, for example, is only 10° above zero. The "design temperature difference" between inside and outside would be 70° minus 10° equals 60°. Therefore, the heating requirement is only 60/100 or 60% of the amount based on 100° TD. The map at the left is zoned according to winter design temperatures, and gives percentages by which results from Step C should be multiplied to find the actual heating requirements for the locality.



**CLIMATE  
CORRECTION  
MULTIPLIERS**

## "CONDENSED METHOD" HEAT LOSS FACTORS\*

1. WINDOWS & DOORS		Multiply sq. ft. by:
a	Without storm sash	113
b	With storm sash	75
2. OUTSIDE WALLS (NET)		Multiply sq. ft. by:
a	SOLID MASONRY — (Brick, stone, etc.) with plaster applied direct to inside surface of masonry wall.	45
b.	AVG. FRAME—Brick Veneer—Wood Siding — Shingles or Stucco — with sheathing, bldg. paper, studs, lath and plaster	30
c.	FURRED MASONRY—(Same as 2a with air space between plaster and masonry wall)	
d.	INSULATED FRAME—Same as 2b—with 1" or less insulation board or blanket	20
e.	HEAVILY INSULATED—Same as 2b—with 2" or more insulation	10
3. CEILINGS & INSIDE WALLS		Multiply sq. ft. by:
a	CEILING—Plaster on lath or wall-board. No floor above—Attic not vented	34
b.	Same as 3a—with 2" or more insulation	12
c.	CEILING of first floor room below unheated room on second floor	17
d.	INSIDE WALL adjacent unheated room	
4. FLOORS		Multiply sq. ft. by:
a	Double wood floor—over cool basement or other enclosed space	15
b.	Same as 4a—but open space below floor exposed to outside	32
5. INFILTRATION		Multiply each sq. ft. of window and door area by:
AIR LEAKAGE		
a	WINDOWS AND DOORS Average fit—Not weatherstripped	50
b.	Average fit—weatherstripped (or equipped with storm sash)	30
c.	Poor fit—not weatherstripped	140
d.	Poor fit—Weatherstripped (or equipped with storm sash)	43
e.	EXTRA FOR EACH OUTSIDE DOOR	1000
f.	EXTRA for air lost up fireplace flue	3000

\*Above factors are approximate heat loss through each sq. ft. of surface with 70° inside and —30° outside.



# Don't Guess Heat Loss!

Jack Kice  
The Coleman Co.  
Wichita, Kan.

**M**Y FRIEND Bill was pretty hard to convince at times. "Why should I go to a lotta' trouble figurin' heat loss? I've put in so many furnaces, I can just look at a house and tell what it takes to heat it!"

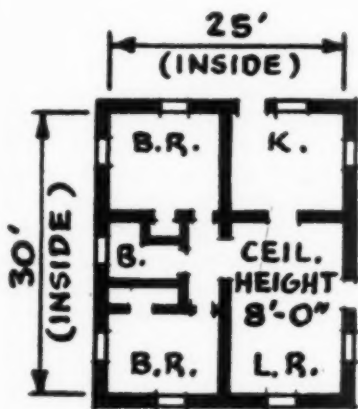
"Okay," I said, "a lot of other experienced heating men can make pretty good guesses, too—*most of the time*. They can probably come close enough four times out of five. But, doggone it, Bill, one dissatisfied customer out of five can cause more grief than the profit on all five jobs amounts to! One bad heating job in a neighborhood is like one rotten apple in a barrel. It spreads. Your business can't afford to have one bad job in a hundred!"

## It's Easy to Figure

I got out a Condensed Method heat loss calculating form and laid it on the bench before us. "Besides, it is not as much trouble to figure it out the right way as you probably think. Look—here's the whole story all on one page, and there is nothing complicated about it!"

When Bill saw how simple it looked, he became a little more interested. And after we worked out the heat loss of a typical house in just a few minutes, using plain old arithmetic he had learned in the Sixth Grade, he got downright enthusiastic.

"By golly, I have to admit that I have worried a lot about some of my guesses, and some of them have been quite a bit off—but I just didn't want to take all the trouble of figurin' out all that stuff in the books about 'U' factors, and coefficients, and all that technical stuff. But this looks easy!"



9 WINDOWS @ 12 SQ. FT.  
2 DOORS @ 20 SQ. FT.

"Well, to be honest, Bill, there isn't much difference between this Condensed Method and the Basic Method recommended by the National Warm Air Heating Association. The fundamental method really isn't as hard as it looks, if you just take the time to study it out. I guess the main advantage in the Condensed Method is that we have boiled it down to a single page, and we've eliminated most of the decimal factors that cause so many mistakes."

So much for our friend Bill. . . . Let's talk about figuring heat loss! It's just as important for you to figure the heat loss of your customer's house, as it was for the shoe clerk to measure your feet the last time you bought a pair of shoes. He has sold so many shoes that he probably could have guessed pretty close to the right size by just looking at your feet. But did he do that? No—he got that combination square thing-bob down off the hook, took off your shoe, and measured your foot carefully. Then, he sold you a pair of shoes that fit those measurements. If he didn't, you probably won't go back or send any of your friends to that store.

## Heating Plant Has to Fit

Heating systems have to fit houses the same as shoes have to fit feet. If a furnace is too small, it can't deliver enough heat in cold weather. Oversized systems, on the other hand, are hard to control, and result in long "off" periods of the burner, and consequent heat stratification in the room. We now realize that it is just about as bad for a furnace to be oversized as to be undersized. And don't forget, the heating man who

Entire House	AREA	FACTOR	BTU/H.R.
WINDOWS & DOORS	148	x 113	= 16,724
NET OUTSIDE WALL	732	x 30	= 21,960
EXPOSED CEILING	750	x 34	= 25,500
EXPOSED FLOOR	750	x 15	= 11,250
		x	=
INFILTRATION	148	x 50	= 7,400
EXTRA Doors	2	x 1000	= 2,000
		x	=
HOURLY HEAT LOSS - BASED ON 100° T.D.			84,834
CLIMATE MULTIPLIER FOR LOCALITY			x 60%
ACTUAL HEAT LOSS AT DESIGN T.D.			50,900

figures right knows exactly what to count on, and will be in a better position competitively than the fellow who sells them way oversize just to "play safe." He will also have fewer complaints from his customers.

A survey of a representative group of furnace dealers showed that surprisingly few used basic heat loss calculations, simply because they have never taken the time to become familiar with the method. They also seem to feel that it takes too long to go to all this trouble on every furnace job. So, most of them who figure the heat loss at all, use some short cut that in many cases results in bigger errors than the experienced guesser would make.

Most of the short cuts are based on the number of cubic feet of space to be heated. When you stop to think about it, basing heat loss on volume, or the number of rooms, or any other simple factor that does not consider the house construction, use of insulation,



Heating estimator referred to in the article.

temperatures involved, and the like, is almost ridiculous. Two houses of identical size and appearance could be built side by side, yet one might have three times the heat loss of the other! There are some short cuts that take more of these factors into account, and give results that come closer to the right answer.

The Coleman "Heating Estimator" slide rule\* is a quick method of obtaining fairly close estimates. It is based on the distance around the house, rather than volume, and allows for various types of construction and the use of storm sash and insulation. One side of the rule applies to one-story houses and the other applies to two-story houses. You can find the approximate heat loss of almost any house at design temperatures all the way from 20 above to 30 degrees below zero, in less than half a minute.

#### Estimator Helps Sales

In our opinion, this slide rule estimator or a similar short cut is useful in the early steps of making a sale, before you have had a chance to see the house or the plans. It gives you an approximate idea of the heating requirements so you can know what type of equipment to talk about. It is especially useful for salesmen, and it is probably all that is necessary for sizing space heaters and other simple types of heating equipment.

On the other hand, we recommend the Basic Method

\*Available from The Coleman Company, Inc., Wichita, Kansas. Please send 25¢ to cover postage and handling.

according to NWAH&ACA and the ASHVE for large buildings and houses having unusual types of construction or other special conditions. There are no limitations to use of the method, since it is fundamentally correct, considering separately each individual source of heat loss from the building.

The Condensed Method is in between the short cut and the Basic Method. As its name implies, it is not a short cut in the usual sense, but is primarily a condensed version of the Basic Method. Intended for residential calculations, it gives practically the same results as the fundamental method, but is so simple that anyone can use it with just a few minutes' explanation and working out one or two examples. The complete method, along with the step-by-step explanation and an example, is given with this article, just as we present it to Coleman dealers in hundreds of schools we have conducted all over the country.

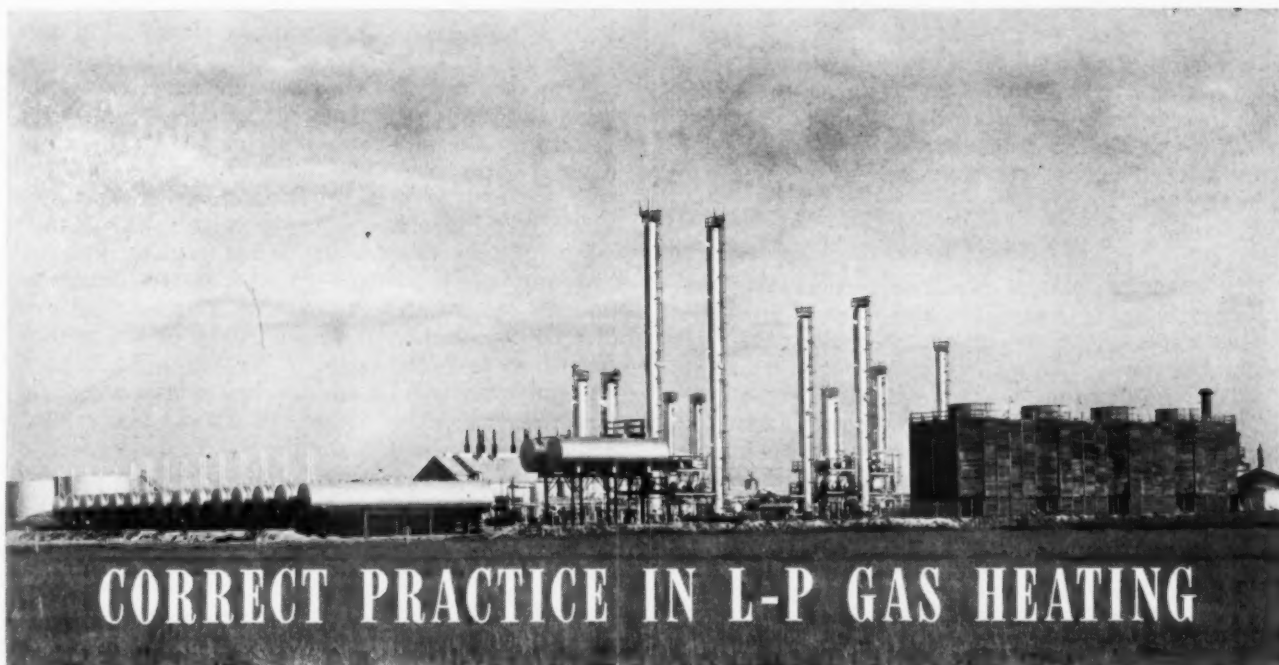
#### Decimals Eliminated

The experienced heating man, who is already familiar with the Basic Method of calculating heat loss, will observe several interesting points in the Condensed Method that help to make it simple. There are only fifteen heat loss factors, covering practically all common types of wall construction, ceilings, floors, windows, and doors. It will be noted that they are given as whole numbers rather than the decimal values in which "U" factors are always given. "U" represents the heat lost through each square foot per degree. Condensed Method Heat Loss factors are derived from "U" but represent the heat lost through each square foot when the inside temperature is 70 degrees and the outside temperature is 30 degrees below zero. This represents a 100-degree temperature difference through the walls and windows (but less through partially exposed surfaces) and is the winter design condition for the coldest sections of the United States. The heat loss in any section having a milder climate is obtained by multiplying the result by the "Climate Correction" percentage as shown on the map, which is zoned according to the ASHVE winter design temperature map. For example, if your outside design temperature is 10 degrees above zero, as in South Carolina, the temperature difference would be 60 degrees, and the actual heat loss would be 60 per cent of the loss at 100 degrees TD.

Another simplification is the procedure for estimating heat loss due to air leakage. We call it the "Window Factor" method. It is as easy as the "Air Change" method but follows the same logical reasoning as the more accurate "Crack Length" method. We simply multiply the combined window-and-door area by a factor selected from Table 5 (depending on the class of fit and use of weatherstripping) to obtain heat loss in Btu per hour. Thus, we use the same area and follow the same process used to calculate transmission heat loss through the windows and doors. A complete explanation of the development of the "Window Factors" and how to use them will be given in a future issue of AMERICAN ARTISAN.

As a further suggestion for making heat loss calculations less tedious, don't try to figure areas down to a "gnat's heel." Drop the fractions and use round figures.

(Please turn to page 226)



*Photo—Oil and Gas Journal*

**Kenneth D. Wolfe**  
**Fisher Governor Co.**  
**Marshalltown, Ia.**

**L**IQUEFIED petroleum gases as we know them today were produced first in a small West Virginia refinery and gasoline plant in 1909. It was found that in producing gasoline it was necessary to let the refined product set in an open weathering tank for several days, to allow the lighter or wild ends (Butane-Propane) to vaporize off and escape to the atmosphere. This, then, produced a fairly stable gasoline, which could be used for internal combustion engines without vapor lock occurring in the engine feed lines or manifold on warm days.

One of the engineers at this plant decided to try to recover these wild gases to see if they could be put to some useful purpose. The result was probably the first liquefied petroleum gas, or what we know today as Butane-Propane, ever produced.

#### **Source of LP Gas**

The crude oil well or the natural gas well is the basic source of all LP gas. In a producing oil well the mixture of oil and wet gas flows from its natural underground storage to the well head where it passes through a separator in which the oil is separated and passed on to the refinery, and the wet gas is taken from the top of the separator and delivered to the gasoline plant. This wet gas is processed through an absorption or compression process for removal of gasoline, Butane and Propane, after which the dry gas is delivered to the pipe lines for transportation and sale to the cities. It is quite common to produce 700 to 800 gallons of LP gases, and 1000 gallons of natural gasoline from processing 1,000,000 cubic feet of wet natural gas through the plant. Originally, this was the only source of liquefied petroleum gases, but in recent years

the refinery engineer has perfected efficient methods by which these gases are also now a main product of his plant.

The liquefied petroleum gas industry has been responsible for the conservation and proper use of millions of dollars of our country's resources. Up until approximately 1926 virtually all Butane and Propane produced in the gasoline plants and refineries was flared and burned as a non-usable product. With the development of the liquefied petroleum gas industry, this wasteful practice was stopped and the products became commercially valuable.

#### **Growth of Use**

Since those days, the LP gas industry has experienced a fantastic growth. In 1926 there were 465,000 gallons of LP gases marketed, and in 1947 an estimated two billion gallons of gas were used by more than four million consumers in the United States. There are over three hundred towns being served by piped LP gas systems and over 2700 bulk stations serving the bottled gas and tank gas customer.

Because of the widespread use and the increasing demand for liquefied petroleum gases, it is essential that those connected with the heating and air conditioning industry should have a sound and basic knowledge of these gases—their properties and their behavior.

#### **Properties**

The properties of these gases are very different from other gases commonly used in the heating industry, and due to the somewhat technical name "liquefied petroleum gas," a great deal of ignorance and mis-



understanding exists pertaining to these gases—their properties and their uses.

This series of articles will serve to clarify and simplify in a non-technical manner the subject of liquefied petroleum gases, and to set forth the fundamentals necessary for a clear understanding of the subject.

Hereafter, liquefied petroleum gases will be referred to as "LP gas."

### What Is LP Gas?

The term "LP gas" is a rather general one and actually includes several technically different products. Normally speaking, however, it is accepted in the industry as covering Butane or Propane or a mixture of those two gases and for practical purposes, if the properties of these two gases are fully known, details of the other gases involved are unnecessary. Therefore, this article is limited to the discussion of Butane and Propane and their mixtures.

Butane and Propane are both members of a chemical family known as the "hydrocarbon series." It is this same family that makes up the constituents of gasoline or ordinary motor fuel. There are six principal children in the hydrocarbon family, as follows:

HYDROCARBON	BOILING POINT
Methane	Minus 258 F
Ethane	Minus 89 F
Propane	Minus 44 F
Butane	Plus 32 F
Pentane	Plus 97 F
Hexane	Plus 155 F

Hexane is the lusty kid in the family, and most motor fuel consists largely of Hexane. He is also the heaviest member of the family and is found under normal temperatures and atmospheric pressure in the liquid state. Starting with the bottom of the list, Hexane, or call it "gasoline," and going up the list, each product is wilder and harder to handle than the one below. For instance, where Hexane is normally a liquid as gasoline, Pentane may boil off and escape unless it is confined under a slight pressure or its temperature is maintained below plus 80 F.

Now if we go on up to the next number, Butane, it requires about 12 pounds pressure at 60 F to keep the gas in a liquid state, and so on up the list. Propane requires 100 pounds pressure at 65 F, and at the top of this family is Methane, which, in the pure state, cannot be liquefied at ordinary temperatures and pressures.

The gasoline and refinery industries have developed many complicated chemical stabilizing processes whereby they are now able to blend Pentane and even Butane with Hexane and produce a stable motor fuel.

### Liquid Under Pressure

Butane and Propane are referred to as liquefied petroleum gases. This means that at normal temperatures of 60 F and atmospheric pressure these products are a dry gas, similar to natural gas, but for commercial handling and distribution, they are compressed and held under pressure until they become liquid similar to water. When these products are so compressed it is possible to handle large quantities in the liquid state either through pipe lines, tank cars, or

truck transports, to permit the national distribution of these products to their various markets. In this regard the industry's tools are quite similar to those used in the fuel oil or gasoline industry, except, of course, all tanks are of the proper pressure strength to handle these products, which must be maintained under their respective pressures to keep them in the liquid state. The pressure strength of LP gas containers varies according to the product being handled; normal Butane takes a 100 pound working pressure tank, and normal Propane a 200 pound type tank. The industry also recognizes mixtures of these fuels and allows for containers having a rating of 125 pounds, 150 pounds and 175 pounds.

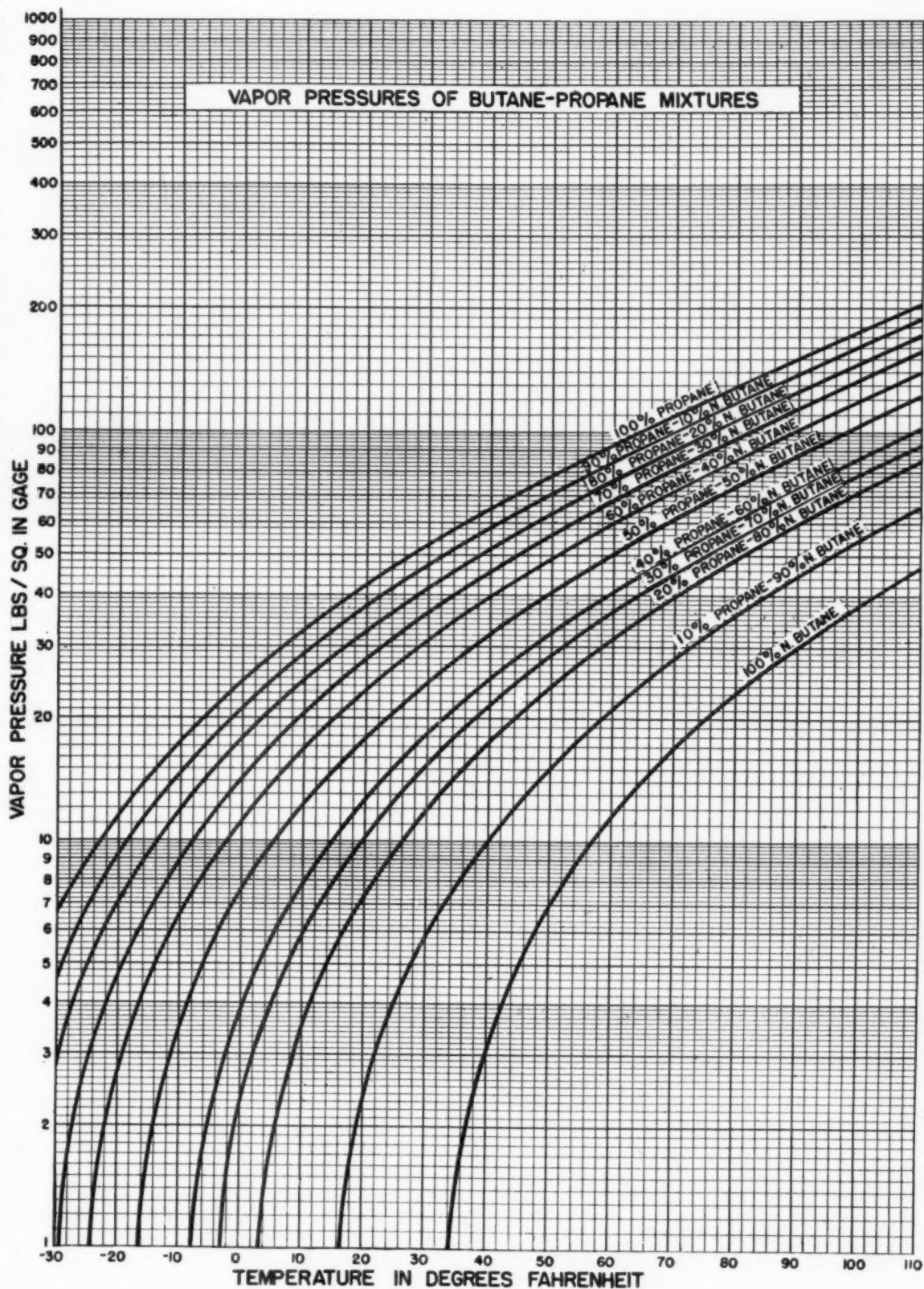
The pressure that LP gas develops in a tank depends upon the composition of the gas and the temperature of the liquid. Normal, or commercial, Propane develops a pressure (vapor pressure) of 100 pounds per square inch at a temperature of 65 F, 130 pounds at 80 F, 178 pounds at 100 F, and 200 pounds at 108 F; if the temperature is lowered, the vapor pressure is also lowered. Propane at 0 F produces only 25 pounds pressure and at minus 10 F only 12 pounds. Butane acts in a like manner, except it has a much lower vapor pressure at respective temperatures, at 60 F a pressure of only 12 pounds, at 80 F 23 pounds, and at 32 F it develops only 1 pound pressure.

### Use of Chart

The various vapor pressures for a given temperature for Butane or Propane or mixtures of these liquids are clearly shown by the curves on chart on opposite page. To find the vapor pressure of any of these mixtures in the chart, select the temperature at the bottom and follow the vertical line upward until it crosses the liquid line being considered. Where these two lines cross, follow the horizontal line to the left and read the vapor pressure as indicated on the left side of the chart. This chart may also be used to determine the percentage of mixture of Butane and Propane. If the vapor pressure and temperature are known, follow these respective lines until they meet, and the type of mixture is indicated where the lines cross.

When dry gas is withdrawn from the top of a tank containing liquid Butane or Propane, the liquid is said to vaporize or boil, not unlike the action of water when heated to 212 F in an open vessel, or when heated to higher temperatures under pressure, as in a steam boiler. If liquid Butane or Propane is taken from the bottom of a container and placed in an open vessel at normal temperature, it will boil off violently until all of the liquid is vaporized. Thus, it will be readily seen that to keep the gases in the liquid state, it is always necessary to keep them in the proper type of pressure tank.

The advantage in liquefied Butane and Propane is, of course, the great amount of energy which can be stored or shipped in a comparatively small volume. One gallon of Propane requires only 231 cubic inches of storage volume, but when the liquid is vaporized it produces 36.5 cubic feet of gas, or 91,500 Btu of energy. Thus, in a tank car containing 10,000 gallons of Propane, there are 915,000,000 Btu or the equivalent of 915,000 cubic feet of natural gas. Butane, having a higher Btu value than Propane, equals 1,026,000 cubic feet of natural gas per tank car.





# AIR DISTRIBUTION . . .

## *Heart of the Air Conditioning System*

Leonard R. Phillips  
Consulting Engineer  
Anemostat Corp. of America

**V**ENTILATING and air-conditioning engineers and contractors know only too well from sad and costly experiences that air-distribution—the final comfort factor—can *make or break* any ventilating or air-conditioning installation.

However, they also know that when devices for this purpose are properly selected, conditioned air is distributed in a manner that meets the most exacting specifications for interior climate control. For improper selection of air-diffusers usually leads to severe drafts, unequalized temperatures, poor humidity control, air stratification, stale air pockets, and other objectionable conditions—all of which lead to complaints for the contractor.

The problem is inherently due to the air duct—because the size of the duct is limited. If an air duct as large as any one whole wall of a room were practical, proper air-distribution would present no problem. But since such a large duct is impractical, air velocity must be sharply increased so that a smaller duct can handle an adequate volume. And so the trouble starts! For

cooling, temperature of air in the duct must be sharply lowered so that the incoming cold air will establish the desired over-all room temperature when mixed with the warmer room air. This variance in air temperatures presents another headache for the contractor.

When this cold, high-velocity air leaves the small duct through an improperly selected fixture, it usually sweeps to the occupancy zone of the room before mixing with warmer room air, and before its velocity is appreciably reduced by entrainment of room air. Such unsatisfactory conditions can be avoided only by reducing incoming air velocity at duct openings. Then the cooled incoming air and the warmer room air can be mixed *well above* occupancy level before the mixture is distributed in a controlled, draftless pattern. This means far more than merely supplying the required volume of properly conditioned air, for if the air circulates improperly—even after it leaves the ducts—complaints will follow which will cost the contractor time and money to correct.

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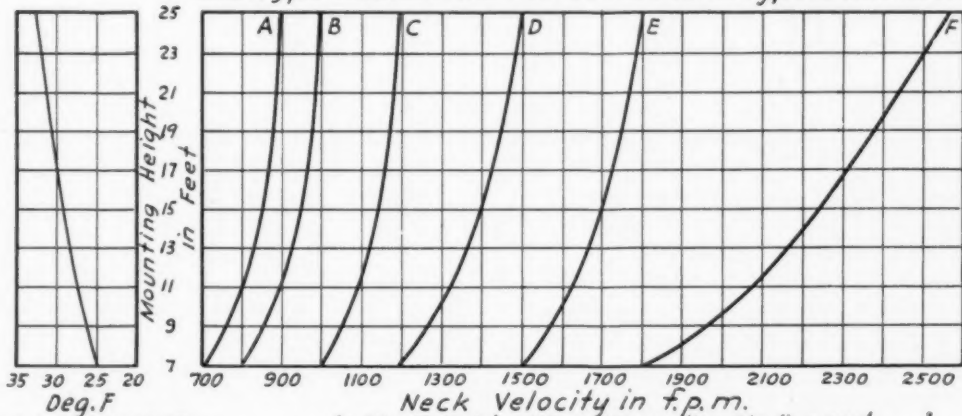
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# SELECTING A DIFFUSER

FIG. 1 Recommended velocities for neck of diffuser will depend on conditions and type selected. These curves are for a Type-B Anemostat



RECOMMENDED  
MAXIMUM COOLING  
TEMPERATURE DIFFERENTIAL FOR THE  
VARIOUS MOUNTING  
HEIGHTS.

RECOMMENDED  
MAXIMUM HEATING  
TEMPERATURE DIFFERENTIAL IS SIXTY  
DEGREES FOR ANY  
CEILING HEIGHTS.

- A-Film, Television & Sound Recording Studios and Broadcasting Control Rooms.
- B-Private Offices, Hotel Bedrooms, Sick Rooms, Broadcasting Studios and Residences.
- C-Libraries, under balconies of Theaters and Auditoriums, Concert Halls, Classrooms, Museums and Hospital Operating Rooms.
- D-General Offices, Restaurants, Theaters & Auditorium Ceilings, Lecture Halls, Stores, Large Hotel Dining Rooms and Dance Halls.
- E-Department Stores, Hotel Lobbies, Industrial Exhibit Rooms and Restaurant Kitchens.
- F-Factories, Store Rooms, Engine Rooms, Greenhouses and spaces where Duct Noise is of no importance.

FIG. 2 Air diffuser size should depend upon recommended neck velocities and volume of air it is to handle. Type-B Anemostat size numbers roughly correspond to dia. in. of largest cone.

Size No.	Neck Dia. in.	Neck Area Sq. in.	Neck Area Sq. Ft.	Neck Velocity in feet per minute																							
				700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2500	3000							
				Capacity in cubic feet per minute																							
10	4	12.56	.087	61.1	69.8	78.5	87.3	96.0	105	113	122	131	140	148	157	166	175	192	218	262							
12.5	5	19.63	.136	95.4	109	123	136	150	164	177	191	205	218	232	245	259	273	300	341	409							
15	6	28.27	.196	137	157	177	196	216	236	255	275	295	314	334	353	373	393	432	491	589							
20	8	50.26	.349	244	279	314	349	384	419	454	489	524	558	593	628	663	698	768	873	1047							
25	10	78.54	.545	382	436	491	545	600	655	709	764	818	873	927	982	1036	1091	1200	1364	1636							
30	12	113.10	.785	550	628	707	785	864	942	1021	1100	1178	1257	1335	1414	1492	1571	1728	1964	2356							
35	14	153.94	1.069	748	855	962	1069	1176	1283	1390	1497	1604	1710	1817	1924	2031	2138	2352	2673	3207							
40	16	201.06	1.396	977	1117	1257	1396	1536	1676	1815	1955	2094	2234	2374	2513	2653	2793	3072	3491	4189							
45	18	256.47	1.767	1237	1414	1590	1767	1944	2121	2297	2474	2651	2828	3004	3181	3358	3534	3888	4418	5302							
50	20	314.16	2.181	1527	1745	1963	2182	2400	2618	2836	3054	3272	3491	3709	3927	4145	4363	4800	5454	6545							
55	22	380.13	2.639	1848	2112	2376	2640	2904	3168	3432	3696	3960	4224	4488	4752	5016	5280	5808	6600	7919							
60	24	452.39	3.141	2199	2513	2827	3142	3456	3770	4084	4398	4712	5026	5341	5655	5969	6283	6912	7854	9425							
65	26	530.93	3.687	2581	2950	3318	3687	4056	4424	4793	5162	5531	5899	6268	6637	7005	7374	8111	9218	11061							
75	30	706.86	4.908	3436	3927	4418	4909	5400	5891	6381	6872	7363	7854	8345	8836	9327	9818	10799	12272	14724							
95	38	1134.10	7.875	5513	6301	7088	7876	8663	9451	10238	11026	11814	12601	13389	14176	14964	15751	17327	19689	23627							

FIG. 3 Table showing radius of diffusion in feet for Type-B Anemostats using various neck velocities.

Size No.	Neck Dia. in.	Neck Velocity in feet per minute																	
		700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2500	3000	
10	4	3-5	3-5	3-6	3-6	3-6	3-7	3-7	3-7	3-7	3-8	4-8	4-8	4-8	4-9	4-9	5-10	5-11	
12.5	5	3-6	3-7	3-7	3-7	3-7	4-8	4-8	4-9	4-9	4-9	4-10	5-10	5-11	5-11	5-11	6-12	7-14	
15	6	4-8	4-8	4-9	4-9	4-9	4-10	5-10	5-11	5-11	5-11	6-12	6-12	6-12	6-13	7-13	7-15	8-17	
20	8	5-10	5-11	5-11	6-12	6-12	6-13	6-13	7-14	7-15	7-15	8-16	8-16	8-17	8-17	9-18	10-20	11-23	
25	10	6-13	6-13	7-14	7-14	7-15	7-16	8-16	8-17	8-17	9-18	9-19	9-20	10-21	10-22	11-23	12-25	14-28	
30	12	8-15	8-16	8-17	9-18	9-19	9-19	10-20	10-21	11-22	11-23	12-24	12-24	12-25	13-26	13-27	15-30	17-34	
35	14	9-18	9-19	9-20	10-21	10-22	11-23	12-24	12-24	12-25	13-26	13-27	14-28	14-29	15-30	16-32	17-35	20-39	
40	16	10-21	10-22	11-23	11-24	12-25	13-26	13-27	14-28	14-28	15-30	15-31	16-32	16-33	17-34	18-36	20-40	22-45	
45	18	11-23	12-24	12-25	13-27	13-28	14-29	15-30	15-31	16-33	17-34	17-35	18-36	18-37	19-39	20-41	22-45	25-50	
50	20	12-26	13-27	14-28	14-30	15-31	16-32	16-33	17-35	18-36	18-37	19-39	20-40	20-42	21-43	22-46	25-50	28-56	
55	22	14-28	14-30	15-31	16-33	17-34	17-35	18-37	19-39	20-40	20-41	21-43	22-44	23-46	24-47	25-50	27-54	31-62	
60	24	15-31	16-32	17-34	17-35	18-37	19-39	20-40	21-42	21-43	22-45	23-47	24-48	25-50	25-51	27-54	30-60	33-67	
65	26	16-33	17-35	18-37	19-38	20-40	21-42	21-44	22-45	23-47	24-49	25-50	26-52	27-54	28-55	29-57	32-64	36-73	
75	30	19-38	20-40	21-42	22-44	23-46	24-48	25-50	26-52	27-54	28-56	29-58	30-60	31-62	32-64	33-66	37-74	42-84	
95	38	24-48	25-51	26-53	27-54	28-56	29-58	30-61	31-63	33-66	34-69	35-71	36-74	38-76	39-79	40-81	43-86	47-98	

Such complaints may seem unwarranted when thermostats and other standard instruments of the system indicate that everything is operating properly. However, if complaints are numerous (and do not come from cranks!) or if an industrial process is affected, a check should be made.

Often an ordinary thermometer and a psychrometer for humidity measurements will show that the complaints are justified. By taking readings at various points about the room, from the floor to the ceiling, the contractor will often find wide temperature differentials.

If both temperature and humidity are unequalized to any extent, a wide variance will undoubtedly be found in air velocities throughout the conditioned enclosure. The contractor can convince himself of this simply by noting how the air movement affects a match flame, tobacco smoke, or cotton fluff.

An accurate test may then be made with a thermo-anemometer (thermometer anemometer).

A Kata-thermometer may be used for the same purpose. However, it is cumbersome and requires more time to operate.

#### **How Improper Air Distribution Occurs**

If the previously mentioned tests indicate that air is being improperly distributed throughout the enclosure, the fault can often be found right at the air-duct openings. In a shipping room of one mid-western dairy plant, for example, blasts of cold air from two unit coolers were so severe that employees could not endure room temperature of 50°F., even though lower temperatures were essential to proper operation of the plant.

When conventional horizontal grilles on the unit coolers in this plant were replaced by scientifically designed air-diffusers, the unsatisfactory conditions were immediately eliminated.

In another plant, the air-conditioning system failed to maintain the temperature and humidity required for the manufacturing process. A study showed that the trouble was entirely due to the air being improperly distributed after leaving the ducts. When efficient air-diffusers were used to replace grilles at the duct openings, the required temperature and humidity were closely maintained throughout the room. And even after air changes were substantially increased for more efficient operating conditions, all drafts were eliminated.

When cold air enters a room through conventional duct outlets—grilles, registers or perforated panels—it usually sweeps to the floor and this forces the warmer room air to the ceiling. Until the velocity of the cold incoming air subsides, it cannot mix with the warmer room air. This results in a room filled with drafts and turbulent air; temperature differentials are great throughout the room; humidity is unequalized, and stagnant air pockets are prevalent.

#### **How Proper Air-Diffusion Distributes the Air**

In the plants previously mentioned such unsatisfactory conditions were rectified by installing Anemostat air-diffusers. This device, as shown in the illustration,

is composed of a series of scientifically designed metal cones assembled in definite relation to each other. Air entering a room passes through these cones and, because of their design, is instantly reduced in velocity within the device. Simultaneously, air from the room—equal to about 35 per cent of the incoming air—is siphoned *into the diffuser* where it is mixed with the incoming air.

The pre-mixed air then leaves the Anemostat at a low velocity and spreads over a pre-determined area *well above* the occupancy zone, and then finally reaches the occupancy level of the room as a slow-moving "low-pressure blanket."

Because the primary air mixing action takes place within this air-diffuser, and because all major air turbulence is limited to its immediate vicinity, no drafts are perceptible to occupants of the room.

It might be said that the air-mixture "settles" into the room instead of "sweeping" in, as it does when conventional fixtures are used at duct openings. Therefore, obstacles such as columns, machines and furnishings do not deflect air-flow. And stagnant air pockets—whether under-cooled or over-cooled—are eliminated as a result of the thorough distribution of air in every part of the room.

The over-all result is even, *draftless* air-distribution that causes both temperature and humidity to be closely equalized throughout the room.

#### **Some Factors to Be Considered By Contractor**

However, before air can be distributed in this controlled pattern, various factors must be considered. Here are some of the points to be considered: the use of the room, minimum and maximum number of occupants, the area of the room, height of ceiling, design of ceiling, locations of duct openings, duct sizes, duct velocities, permissible air velocities within the room, number of air-changes per hour, permissible sound levels, location of columns and other obstructions, the location, type and heat-load of lighting fixtures, location of exhaust outlets, unusual concentrations of internal heat, solar radiation, and other items.

How, then, are engineers and contractors to know what type of diffuser to specify for a particular job? Naturally, specialists are available, but for routine jobs and preliminary planning you may prefer to make your own selection.

Because of the various factors involved, one single design of Anemostat could not be expected to solve all air-distribution problems. Therefore, different designs are used for different conditions. For example, 180 Anemostats are used in a large building of the International Business Machines Corp., at Endicott, N. Y. Because conditions differ throughout this building, 72 of the devices are wall-type diffusers and 108 are ceiling-type. In some parts of the building duct velocities exceed 1500 fpm, yet velocities in occupancy levels of rooms do not exceed 40 fpm—an air motion of less than one-half mile per hour.

Since these air-diffusers circulate air of the highest duct velocities in a *draftless* pattern, they make it possible to install smaller ducts to handle larger vol-

(Please turn to page 212)



# Cooling by Use of Outside Air

Martin E. Marsalis  
American Metal Products Co.  
Fort Worth, Texas

**E**VERYONE appreciates and understands the use of natural breezes. Equally well known is the fact that lower temperatures exist outdoors, after night-fall, than indoors. Hence, when natural breezes prevail at night, a simple opening of doors and windows assures comfortable temperatures indoors.

Unfortunately, nature is fickle and unreliable in providing such breezes. This undependability of nature is directly responsible for mankind's effort to bring the outdoors, indoors at night by use of various arrangements of electric fans.

## Attic Fans

So-called "attic fans" are probably the best known devices for creating airflow through homes. Essentially, these fans are no more than an oversize "electric fan," placed in the attic for lack of space elsewhere. To eliminate complicated operation, these fans are usually of sufficient capacity to provide airflow throughout the entire house.

### Advantages:

- Out of sight in the attic.
- Quiet operation, if properly installed.
- Provides airflow and cooling throughout entire house, at night.

### Disadvantages:

- High first cost and high installation cost.
- Purchase restricted to property owners.
- Useless in daytime, due to higher temperature outdoors.
- Airflow from outdoors conveys dust and dirt indoors.
- Difficult of access for oiling and servicing.
- Due to channeling of airstream from window inlets to fan, proper diffusion, or airspread, is difficult.

## "Window Type Exhaust Fans"

"Window type" exhaust fans, installing simply in any average window, have rapidly grown in popularity during recent years. These fans are much smaller than

attic fans and normally are used to create airflow through only one or two rooms.

### Advantages:

- Low first cost, with no installation cost.
- Lower operating cost.
- Readily accessible for service and oiling.
- Non-property owners are prospects, due to portability from one residence to another.

### Disadvantages:

- Cools smaller area.
- More noise, due to proximity to occupants.
- Channeling of air from window inlets to fan makes proper diffusion, or airspread, difficult.
- Window screens must be removed, or high resistance to airflow will greatly reduce fan's capacity.
- If window screen is removed, flies, mosquitoes and other insects will enter, unless large area screen covered box is installed over window.
- Even when exhaust fan is in operation, due to recycling of air through propeller blades, insects may be drawn indoors. (This characteristic may be demonstrated by blowing smoke into discharge side of any electric fan. Note re-entrance of smoke in center and near outer edges of propeller blade.)

## "Input Type Window Fans"

"Input" type window fans have recently appeared on the market. In the author's opinion, this type of "night cooling" fan will render obsolete the "exhaust" type when its merits become better known to the trade.

Best design observed by the writer employs a much smaller fan, due to provisions made for proper "beaming" or spread of airstream. Exterior consists of stream-lined louvered cabinet, housing a plastic insect screen of sufficient area to permit full capacity airflow, while excluding rain. This cabinet is readily removable from window, as no connection is made to front panel supporting fan.

Interior is beautifully finished with easily adjustable side panels, permitting quick fit in any average window.



Diffusion louvers of a new and advanced design permit full and complete control of entering airstream. Three-speed fan control provides flexibility of operation.

**Advantages:**

Streamlined appearance.

Less power consumption, due to practical use of smaller fans.

Airstream entering room under pressure may be diffused, or spread, as desired.

Readily moved from one location to another.

Exclusion of insects and rain, due to inbuilt screen and cabinet, with little lessening of air volume.

Readily accessible for servicing and oiling.

**Disadvantages:**

Slightly higher first cost.

More difficult to install above first floor, due to outside cabinet.

**"Portable Multi-Purpose Fan"**

Making its initial appearance on the market in 1946 was a new type fan which is designed to meet several needs. Operating as either a "console" fan or in "pedestal" operation, this fan, being mounted on casters, is entirely portable and has a twenty-four hour use, as compared with the strict use of previously discussed fans to "nighttime" cooling.

To create a flow of air through a room, it is necessary only to exhaust at *some* point, so this fan may be rolled to either a window or doorway with its airstream directed outward. This provides airflow into room due to so-called suction through windows. Fan may be placed proper distance from screen, if exhausting through window, thus alleviating losses due to screen's resistance. Diffusion louvers may be set to utilize more of screen's area.

Using the superior input principle, this fan may be "wheeled" up to any open window so as to draw in outside air. Diffusing louvers provide control of airstream.

During daytime operation, when air is cooler *indoors* than *outdoors*, fan is used in normal manner to circulate indoor air. Choice of vertical, or horizontal, position provides highly flexible operation.

Being portable, this fan also may be used for exhausting heat and fumes from kitchen, by wheeling up to back door.

**"Evaporative Air Conditioner"**

Far superior to any of the foregoing methods, is use of a modern Evaporative Air Conditioner. While the use of this very practical device is well accepted in many inland areas, few sales outlets are aware that, properly presented, their use is perfectly practical even in swamp country or along sea shores. Here's the story:

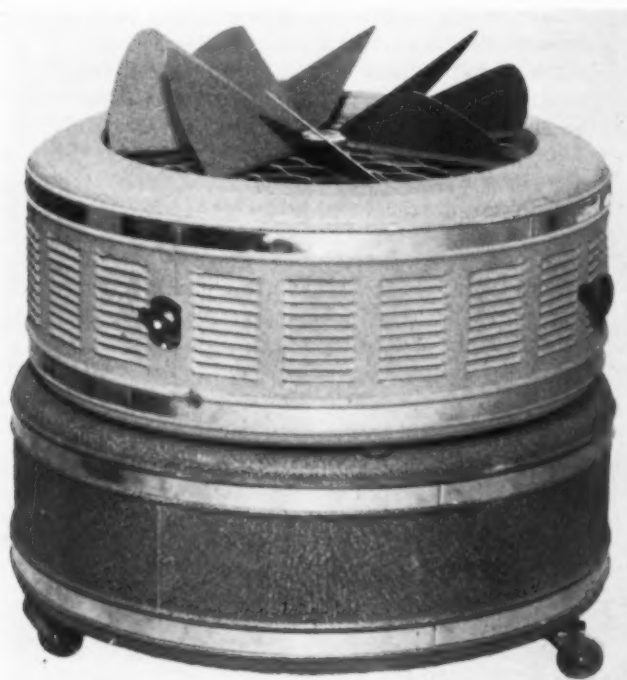
None of the previously mentioned air handling devices are equipped with filters. As a consequence, drawing dust and dirt in the home is inevitable. Aspenwood fibre pads, such as used in many Evaporative Air Conditioners, do an exceeding good job of filtering out dust from the airstream.

If these or any other filters were employed on ordinary fans, cleaning them would be a frequent task.

However, in the Evaporative Air Conditioner, a means is provided for waterflow over the pads. This is accomplished either by a small needle valve, or a miniature electric pump, the small amount of water used being obtained from a small copper tube attached to water lines. Water flowing over the pad keeps it

(Please turn to page 210)

The fan described in the text is shown operating.



Same fan used as a decorative table.





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AMERICAN ARTISAN



*Right This Way*

**The Silver Anniversary  
National Oil Heating Exposition  
Oil Heat Institute Convention**

**THE COLISEUM  
CHICAGO**

**APRIL 5 - 8  
1948**

# OHI SILVER ANNIVERSARY

SINCE this year, 1948, marks the Silver Anniversary of both the Oil Heat Institute and the installation of the first automatic oil burner—the very foundation of the Oil Heating Industry—it is only fitting that the two events should be held in conjunction. Therefore, the city of Chicago will be the scene of these major events on the calendar of the industry with the National Oil Heat Exposition taking place in the Coliseum and the OHI Convention holding its sessions at the Palmer House. April 5th will be "Exposition Opening Day," the 6th "Institute Day," the 7th "Burning Oils Industry Day" and the 8th will be set aside as "Dealer Day."

All indications are that the Silver Anniversary Exposition will be the largest in the history of such shows and many truly post-war products will be on display. There are certain restrictive conditions involved in the installation of oil fired equipment, at this time, but there still exists the replacement market that offers a tremendous field for the sale of new and modern equipment. Many oil heating units have been installed in the last twenty-five years and a considerable percentage of them have reached the end of their usefulness. The great strides in development of efficient, dependable oil heating equipment has also contributed to the obsolescence of many existing heating plants.

## The Program

As can be observed from the detailed program on this page the convention of the OHI has been planned to provide maximum interest for those in attendance and the talks scheduled will be both timely and informative. The merchandising of equipment will be the subject of considerable discussion and such other topics of importance as housing, steel supply and fuel supply are on the agenda. After the speakers have been heard there will be a forum session with a panel consisting of the speakers and Chairman J. A. Collins, OHI Distribution Division; J. W. Owens, chairman OHI Accessory Division; R. S. Bohn, president OHI and Frank Faust, chairman OHI Engineering committee.

## Old Timers

One of the highlights of the meeting will be the revival of the Old-Timers' Club of the Oil Burner Industry. During the war and as a result of the death of Chairman William Kemp, the organization was inactive. Now, however, Regional Director Owens, Chicago, has taken over as chairman, set up a committee and arranged for a meeting of the group at this convention.

# THE PROGRAM

Note: The exposition will be at the Chicago Coliseum. All convention meetings will be at the Palmer House.

## "OPENING DAY"—MONDAY, APRIL 5

- 10:00 A.M.—Room 9, OHI Board of Directors quarterly meeting.
- 12:00 N to 10:00 P.M.—Registration at Coliseum.
- 1:00 P.M.—Coliseum—Exposition opens.
- 10:00 P.M.—Exposition closes.

## "INSTITUTE DAY"—TUESDAY, APRIL 6

- 9:30 A.M.—Room 9—Annual Meeting, OHI Accessory Division; J. W. Owens, Chairman.
- 9:30 A.M.—Red Lacquer Room—Annual Meeting OHI Distribution Div.; J. A. Collins, Chairman.
- 10:30 A.M.—Red Lacquer Room—Annual Meeting, Oil-Heat Institute of America, President R. S. Bohn, Chairman.
- 12:00 N to 10:00 P.M.—Registration at Coliseum.
- 1:00 P.M.—Coliseum—Exposition opens.
- 1:00 P.M.—New Board of Directors luncheon meeting.
- 2:30 P.M.—Ladies entertainment.
- 10:00 P.M.—Exposition closes.

## "BURNING OILS INDUSTRY DAY"—WED., APRIL 7

- 9:30 A.M.—Red Lacquer Room—Industry Session (Everyone welcome.) Speakers: Stephen P. Cauley, Socony-Vacuum Oil Co., "Effects of Revised Specifications on Distillate Fuel Oils," with E. B. Delgass co-author.—A. T. Atwill, President, Quaker Manufacturing Co., "Vaporizing Equipment in 1948."—Fred Hainer, Vice-President, Cleaver-Brooks Co. "Package Steam Units."—Other speakers to be announced.
- 12:30 P.M.—Ball Room—OHI Accessory Div. luncheon.
- 12:00 N to 10:00 P.M.—Registration at Coliseum.
- 1:00 P.M.—Coliseum—Exposition opens.
- 1:30 P.M.—Room 14—Ladies entertainment assembly.
- 10:00 P.M.—Exposition closes.

## "DEALER DAY"—THURSDAY, APRIL 8

- 9:30 A.M.—Red Lacquer Room—Merchandising Session (Everyone welcome.) Speakers: Thomas S. Holden, President, F. W. Dodge Corp., "Housing in 1948."—Dr. Robert E. Wilson, Chairman of the Board, Standard Oil Co. (Indiana) "Burning Oils."—C. M. Daniels, General Sales Manager, Bethlehem Steel Co., "Steel Availability in 1948."—W. A. Matheson, Vice President, Eureka Williams Corp., Williams Oil - O - Matic Division, "Equipment Merchandising 1948."—After the speakers are heard, a forum session will be held with a panel including the speakers and the Chairman J. A. Collins; J. W. Owens, Chairman OHI Accessory Division; R. S. Bohn, President, OHI; and F. H. Faust, Chairman OHI Engineering Com.
- 12:00 N to 5:00 P.M.—Registration at Coliseum.
- 1:00 P.M.—Coliseum—Exposition opens.
- 5:00 P.M.—Exposition closes.
- 7:30 P.M.—Ball Room—Silver Anniversary Banquet.
- 11:00 P.M.—Red Lacquer Room—Dancing to 1:00 A.M.

# Silver Anniversary Exhibitors

**ACE ENGINEERING COMPANY**, 1435 West 15th St., Chicago 8, Ill.—Booth 614.

In attendance: J. W. Cowan, R. W. Bardach, A. F. Jelenc, E. L. Stejskal.

Exhibiting: "Uniflow" horizontal rotary type oil burner.

**AIR CONTROLS, INC.**, 2310 E. Superior Ave., Cleveland 14, Ohio—Booth 412.

In attendance: B. G. Krause, G. L. Schwarz, O. A. Harris.

Exhibiting: Furnace blowers, propeller fans, window fans.

**ALDRICH COMPANY**, Wyoming, Ill.—Booth 243.

In attendance: P. M. Stephenson, E. L. Bedard, E. L. Fox, Bernard Mulder, Carl O. Staley.

Exhibiting: Oil burners, heating boiler-burner units, water heaters.

**AMERICAN ARTISAN**, 6 N. Michigan, Chicago, Ill.—Booth 245.

In attendance: C. E. Price, J. E. Peterson, J. J. McCullough, W. J. Osborn, R. A. Jack, F. P. Kottra, J. D. Thomas, G. C. Cutler.

Exhibiting: Publication—American Artisan, technical books, market data.

**AMERICAN MOHAWK CO.**, 580 Hudson St., New York 14, N. Y.—Booths 513-515.

In attendance: Harry A. Toker, Harry S. Londa, Robert Toker, Jack Cohen.

Exhibiting: Conversion oil burners.

**ANCO PRODUCTS CORP.**, 932 Market St., Paterson 3, N. J.—Booth 612.

In attendance: Harry Novick.

**ANDERSON TANK & MFG. CO.**, 2610 N. Dort Hwy., Flint 7, Mich.—Booth 136.

In attendance: E. R. Lavery.

**APPLIED MECHANICS CO.**, 167 Oliver St., Boston 10, Mass.—Booth 502.

In attendance: A. H. Chapin, H. J. G. Rudolf, Gene Granse, Bill Granse, L. E. Schulein, T. C. French.

Exhibiting: Galongage.

**AUTOMATIC DEVICES CO.**, 53 W. Jackson Blvd., Chicago 4, Ill.—Booth 312.

In attendance: Henry T. Kucera, William Wallin, Willis Pennington, John Schultz, Paul Olesen, Edward Weingand, Wm. Dwyer.

Exhibiting: The Weather-Man, control of building heating from outside.

**BACHARACH INDUSTRIAL INSTRUMENT CO.**, 7000 Bennett St., Pittsburgh 8, Pa.—Booth 315.

**ROBERT BARCLAY, INC.**, 122 North Peoria St., Chicago 7, Ill.—Booth 620.

In attendance: Milton K. Arenberg, Emerson A. Spires, Laurence P. Felker, Richard Collins.

Exhibiting: "Ken" quick hook-up tank valves, "Ken" combustion chambers, oil burner repair parts and installation accessories.

**AMERICAN ARTISAN**, March, 1948

**BELL & GOSSETT CO.**, 8200 N. Austin Ave., Morton Grove, Ill.—Booths 409-411-413.

In attendance: R. E. Moore, R. A. Patterson, Frank C. Hackett, John Shank, Joseph Flasch, William Warner, William Boone, E. J. Gossett, C. E. Pullum, Walter Lige, Chester Towns.

Exhibiting: Forced hot water heating specialties including boosters, valves, domestic water heaters, Airtrol fittings, Monoflows, etc.

**BETHLEHEM FOUNDRY & MACHINE CO.**, Brodhead Ave. & Second St., Bethlehem, Pa.—Booth 238.

**BOGUE ELECTRIC MFG. CO.**, 37 Kentucky Ave., Paterson 3, N. J.—Booth 714.

**BREESE BURNERS, INC.**, 341 E. Ohio St., Chicago 11, Ill.—Booths 509-511.

**BREUER ELECTRIC MFG. CO.**, 5100 N. Ravenswood Ave., Chicago, Ill.—Booths 715-717.

**THE BRUNDAGE CO.**, 512 North Park St., Kalamazoo 11, Mich.—Booths 445-447.

In attendance: H. F. Brundage, F. Ward Brundage, W. A. Rockafeld, J. E. Brundage, Fred R. Bishop, Lou Reining.

Exhibiting: Furnace blower assemblies and conversion cabinet units.

**BURNING OIL DISTRIBUTORS ASSOCIATION and CHICAGO OIL BURNER ASSOCIATION—COMBINED BOOTHS**, 64 East Jackson Blvd., Chicago 4, Ill.—Booths 557-558.

In attendance: Verne S. Follansbee.

**CENTRAL STATES STEEL BOILERS**, 4649 W. Harrison St., Chicago, Ill.—Booth 723.

In attendance: Rubin Sokoloff, Al Sokoloff, Wm. O'Connell.

Exhibiting: Cutaway model of boiler.

**CENTURY ENGINEERING CORP.**, 401 Third St., Cedar Rapids, Iowa—Booths 437 and 443.

In attendance: M. D. McWilliams, John Rosche, A. H. Mellott, Jack Stites, R. P. Nessler, B. J. Lattner, Ray Considine, W. E. Haynes, Davis Lang, Jr.

Exhibiting: Burners, furnace units, boiler units, water heaters.

**CLEVELAND STEEL PRODUCTS CORPORATION**, 7306 Madison Ave., Cleveland 2, Ohio—Booths 43 and 44B.

In attendance: J. L. O'Brien, W. J. Smith, Jr., R. L. Lucas, L. F. Dienst, D. W. Rouse, W. J. Watchler, J. F. Donnelly, J. A. Lappin, L. D. Clough.

Exhibiting: Conversion Oil Burners (Gun and Rotary), oil fired boilers, furnaces, gas fired furnaces, gas conversion burners.

**COLE-SEWELL ENGINEERING COMPANY**, 2288 University Ave., St. Paul 4, Minn.—Booth 703.

In attendance: H. J. Sewell, E. W. Laudert, S. H. Burt.

Exhibiting: Dealer's display cards.

**COLUMBIA BOILER COMPANY**, Pottstown, Pa.—Booth 225.

In attendance: Frank Boorman, H. J. Loughney, John G. Howley.

Exhibiting: Heating boiler burner units, "H. R. T." power boilers.

**COMMERCIAL FILTERS CORP.**, 18 W. Third St., Boston 27, Mass.—Booth 708.

In attendance: E. W. Sherburne, F. I. Tourteldt, J. L. Tourteldt, R. Ludemann, L. Wilson, K. B. Stone, T. Roche.

Exhibiting: Filters for oil burners, stoves, bulk heating oils, gravity and pressure filters.

**CONCO ENGINEERING WORKS**, Mendota, Ill.—Booth 522.

In attendance: Walter Sormane, J. B. Walton, L. N. Beardsley, J. T. Wells.

Exhibiting: Gun type conversion burners, winter air conditioners, "Conco Breeze" horizontal burner, "Conco Breeze" horizontal burner conditioners.

**CONSOLIDATED INDUSTRIES, INC.**, Lafayette, Ind.—Booth 722.

**DELCO APPLIANCE DIVISION GENERAL MOTORS CORPORATION**, 391 Lyell Ave., Rochester, N. Y.—Booths 141, 143, 242 and 244.

Exhibiting: Conversion oil burners, Conditionaire units.

**DELAVAN ENGR. CO.**, 414 12th St., Des Moines 9, Iowa—Booth 111.

In attendance: Nelson B. Delavan, Eugene Olson, H. L. McNally.

Exhibiting: Delavan-Balloffet design oil burner nozzles and accessories, Adaptrap (anti-drip device).

**DESOTO OIL BURNER CORP.**, York, Pa.—Booth 704.

**DIELECTRIC PRODUCTS CO.**, 125 Virginia Ave., Jersey City, N. J.—Booth 220.

**THE DOLE VALVE COMPANY**, 1933 Carroll Ave., Chicago 12, Ill.—Booth 450.

In attendance: K. Mulholland, H. Aronson, B. McLouth, J. F. Lund.

Exhibiting: Automatic registers, No. 16 automatic hot water air valves, watermixers, air and vacuum valves.

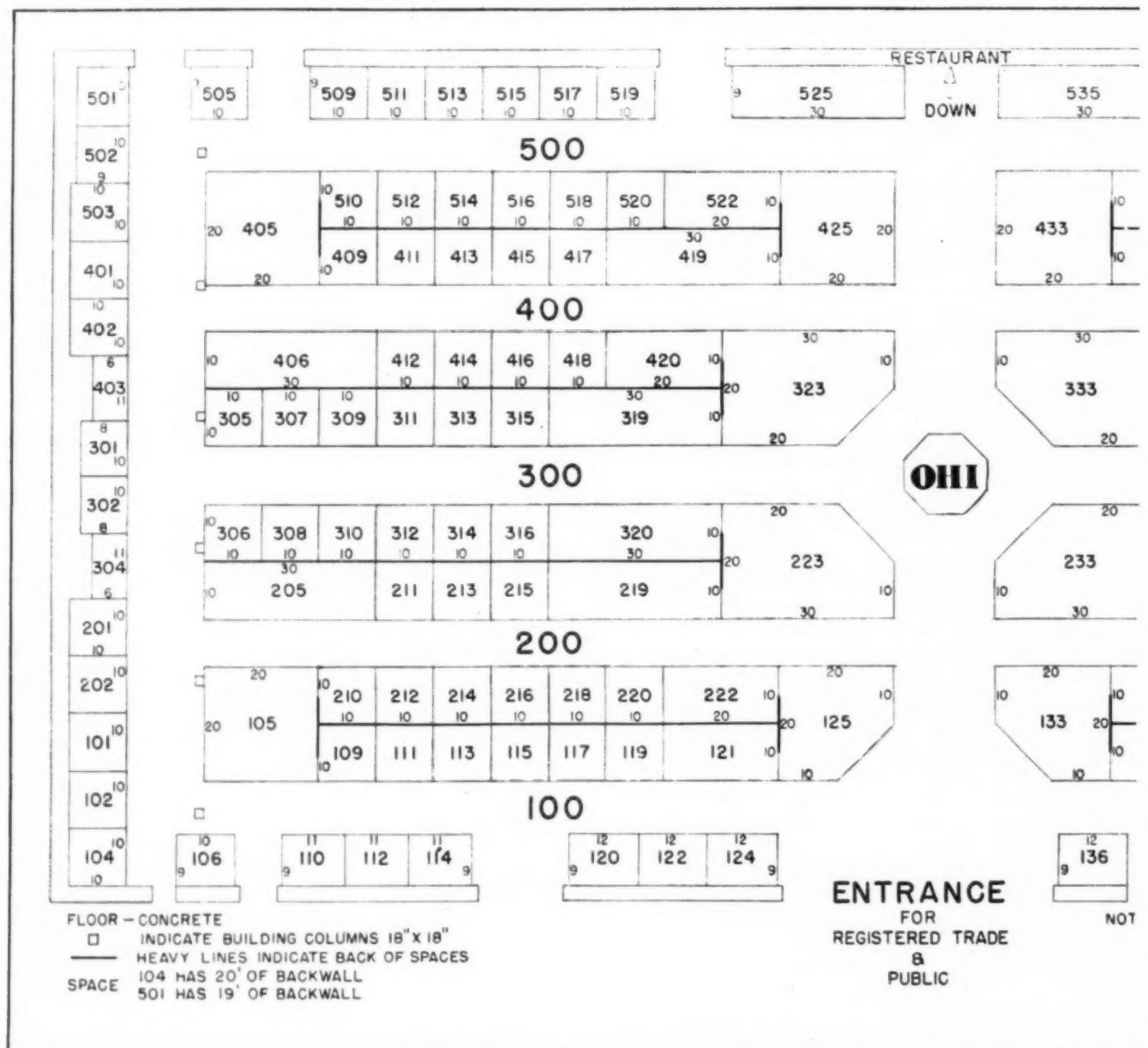
**DONGAN ELECTRIC MANUFACTURING CO.**, 2987 Franklin St., Detroit 7, Mich.—Booth 110.

In attendance: Lyle J. Hicks, K. I. Clisby, Allen D. Walter, J. B. Evans, Chas. E. Hicks.

Exhibiting: Transformers.



# FLOOR PLAN OF THE BOOTHS CHICAGO COLISEUM

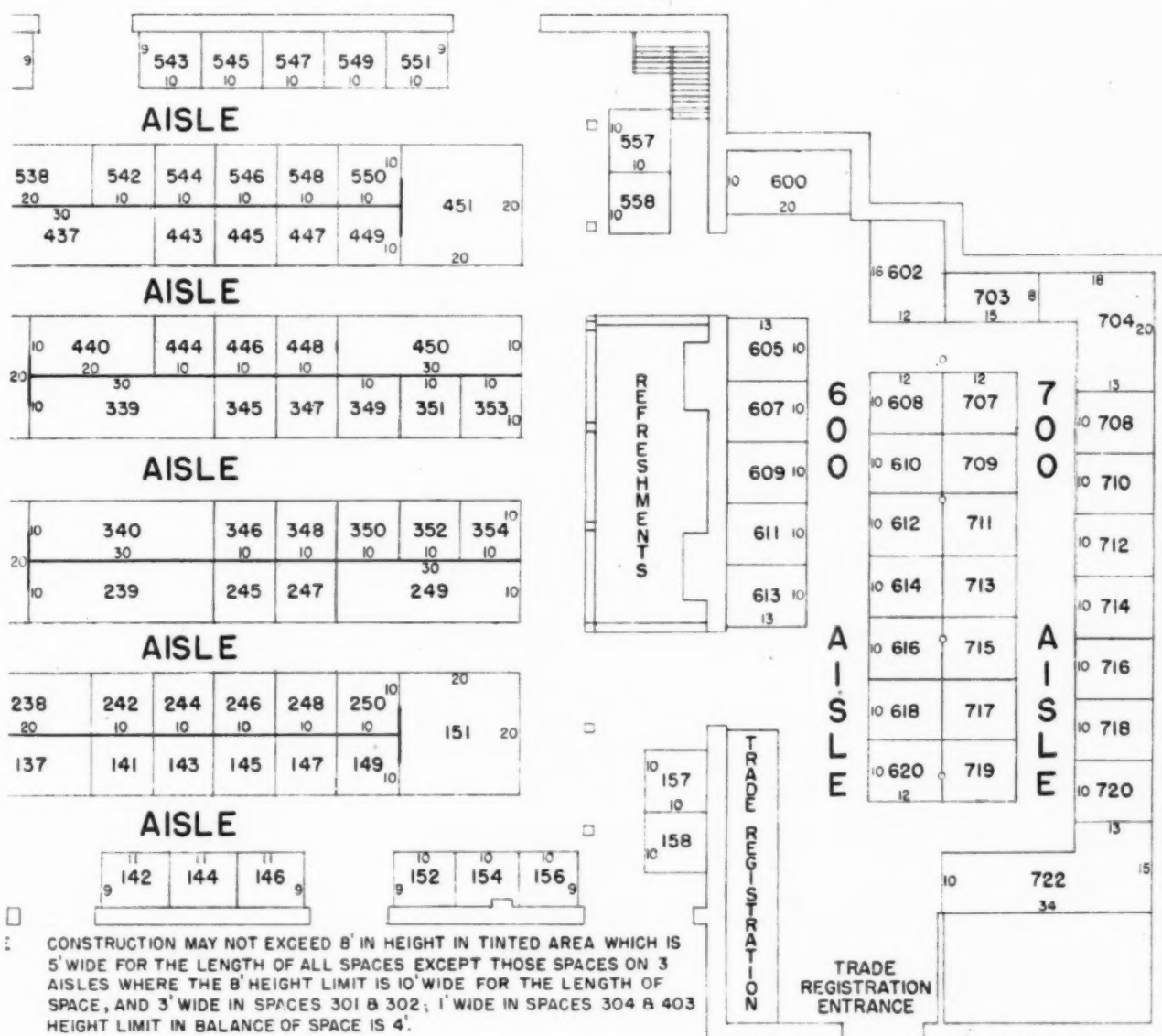


## Industry Invited

This is an historic year for the oil burning industry—its twenty-fifth year of progress. I cannot state it better than to repeat what we have adopted as a kind of slogan. The Silver Anniversary National Oil Heat Exposition and Convention, which I cordially invited you to attend, will be your golden opportunity—the open door to the next 25 years of continued progress.—R. S. Bohn, President, Oil Heat Institute.

## ATTENTION OLD-TIMERS OF THE OIL BURNER INDUSTRY!

**A revival of the Old-Timers' Club of the Oil Burner Industry is definitely under way. A charter has been applied for and an important meeting will be held in Chicago, Tuesday, April 6. In the event that any of the Old-Timers have not received a notification or renewed their membership in order to attend this meeting, with which dinner and entertainment will be held, get in touch with Acting Chairman Jim Owens, 4201 Belmont Ave., Chicago.**



**DUO-THERM DIVISION, MOTOR WHEEL CORPORATION**, Mount Hope & Washington Aves., Lansing 3, Mich.—Booths 142-144-146.

In attendance: R. H. Reeder, E. M. Crary, Karl Egeler, A. R. Frantz, J. H. Kennedy, G. C. Weaver, B. F. Burkholz, J. K. Nelson, R. C. Finney.

Exhibiting: Automatic fuel oil furnaces, automatic fuel oil water heaters, automatic gas water heaters, fuel oil space heaters.

**F. W. DWYER MANUFACTURING CO.**, 317 S. Western Ave., Chicago, Ill.—Booth 152.

In attendance: F. W. Dwyer, J. G. Dwyer.

Exhibiting: CO<sub>2</sub> indicators, draft gages, stack thermometers.

**ECKHART MFG. CO.**, 470 First Ave., Roselle, N. J.—Booth 339.

In attendance: Arnold Eckhart, Sr., Hilmer F. Rodler, Victor S. Radlinski, Arnold Eckhart, Jr., Harry E. Hoagland, Fred H. Horne.

Exhibiting: Korth-Aire forced air furnaces, Silent Korth oil burners.

**EDDINGTON METAL SPECIALTY CO.**, 941 Czarnecki St., Eddington, Pa.—Booth 538.  
In attendance: Walter V. Czarnecki, Jr., Stanley Czarnecki, Wesley Czarnecki, Casimer Czarnecki.

Exhibiting: Oil burner nozzles, pressure regulating valves, pipeline strainers, air cones, stabilizers, servicemen's kits, pumps.

**ELECTROL BURNER MANUFACTURING CO., INC.**, 22 Union Ave., Rutherford, N. J.—Booths 512-514.

In attendance: R. F. Andler, L. W. Schroeder, J. R. Quigley.

Exhibiting: Oil burners and air conditioners.

**FAIRBANKS, MORSE & CO.**, 600 S. Michigan Ave., Chicago 5, Ill.—Booth 610.

**FEDERAL BOILER CO.**, Granite & West Sts., Midland Pk., N. J.—Booths 718-720.

**FIELD CONTROL DIVISION of H. D. CONKEY & CO.**, Mendota, Ill.—Booths 416-418.

In attendance: C. W. Potter, R. A. Friestad, James Burch, Fay Kinne, Russell Glass, Mark Atchison, Paul Jett, Howard Waff, Fred McGee, E. M. Clary, Wayne Davis, Frank Lenihan.

Exhibiting: Barometric draft controls type M and type R series.

**FITZGIBBONS BOILER CO., INC.**, 101 Park Ave., New York 17, N. Y.—Booth 320.

In attendance: R. C. Malvin, G. E. Olsen, J. R. Collette, G. Nelligann.

Exhibiting: Fitzgibbons steel boilers.

**FLUID HEAT DIV., ANCHOR POST PRODUCTS**, 6720 Eastern Ave., Baltimore 24, Md.—Booth 340.

**GENERAL ELECTRIC, AIR CONDITIONING DEPT.**, 5 Lawrence St., Bloomfield, N. J.—Booth 133.

In attendance: A. Rubicam, J. R. Frankenberg, L. H. Hobson, L. H. Matthes, H. W. Pennington, S. J. Levine, F. H. Faust, J. P. Turner.



**THOMAS S. HOLDEN**

President

F. W. Dodge Corp.

To speak on "Housing in 1948" at OHI Silver Anniversary Convention, Chicago, April 8.

Exhibiting: Oil-fired boiler, oil-fired warm air furnace.

**GENERAL ELECTRIC CO., APPARATUS DEPT.**, Schenectady, N. Y. & Ft. Wayne, Ind.—Booth 605.

In attendance: R. A. Thompson, C. J. Monroe, H. E. Priwer, M. W. Edgar, H. K. Pritchard, J. P. Coughlin, M. O. Marsh, F. Ondrovik.

Exhibiting: Fractional horsepower motors, ignition transformers.

**GENERAL FILTERS, INC.**, 12890 Westwood Ave., Detroit 23, Mich.—Booth 353.

In attendance: Arthur D. Redner, Mrs. Arthur D. Redner, Robert G. Gregory, William B. Forrest, L. E. Schulein, Gene and Bill Granse.

Exhibiting: Three models of fuel oil filters.

**GENERAL FITTINGS CO.**, 12890 Westwood, Detroit 23, Mich.—Booth 326.

In attendance: John J. Cotter, R. F. Hull, W. S. Moffitt, A. A. Ridderson, C. A. Maine, H. F. Horton.

Exhibiting: General tankless water heaters, instantaneous water heaters, indirect water heaters, converters, mixing valves, water hammer silencers, fuel oil heaters, pipe unions, copper tube hangers and clips. Cody automatic electric water heaters and water heater elements.

**GENERAL OIL BURNER CORP.**, 2300 Sinclair Lane, Baltimore 13, Md.—Booth 420.  
In attendance: Claude W. Schaefer.

**GENERAL OIL HEATING CORP.**, 322 55th St., West New York, N. J.—Booth 222.

**GERSTEIN & COOPER CO.**, 1-3 W. Third St., South Boston 27, Mass.—Booth 516.

In attendance: John D. Landerman, Edward Robichaud.

Exhibiting: Oil fired water heaters for domestic and forced hot water heating, in copper; tankless heaters, all copper.

**GUARDIAN PRODUCTS CORP.**, 1215 E. 2nd St., Michigan City, Ind.—Booth 350.

**HAJOCA CORP.**, 1687 Haddon Ave., Camden, N. J.—Booth 613.

**SID HARVEY, INC.**, 104 E. Mineola Ave., Valley Stream, N. Y.—Booths 154-156.

In attendance: Sid Harvey, Lawrence Harvey, William C. Archer, Joseph R. Ziminski, Walter L. Bernard, Mathias P. Bernard, Anthony J. Lazar, John J. Deyo.

Exhibiting: Harvey Packages—for standardizing special burners, including the Harvey Burner Casting Package with the shell designed combustion head. Pump, valve, transformer, Lo-water cut-off, motor, relay and control rebuilding.

**HARVEY-WHIPPLE, INC.**, 55 Emery St., Springfield 1, Mass.—Booths 305-307-309-311-313.

In attendance: Ray G. Whipple, Walter O. Harvey, T. A. Hodgdon, W. C. Dee, L. W. Shaw, Erling E. Olsen, Charles S. Reynolds, Frank Kirk, Philip C. Johnson, Robert T. Krisinger, Bennett T. Church.

Exhibiting: Master Kraft conversion oil burners, Master Kraft warm air conditioners, Master Kraft Sun-Blaze boilers.

**HEAT TIMER CORP.**, 160 Fifth Avenue, New York 10, N. Y.—Booth 605.

In attendance: Edward Zeitlin.

**THE HEIL CO.**, 3000 W. Montana St., Milwaukee 1, Wis.—Booth 425.

**HERCO OIL BURNER CORP.**, 109 W. Chestnut St., Lancaster, Pa.—Booth 347.

In attendance: H. H. Wilkinson, Fred A. Wiker, Charles A. Lynch.

Exhibiting: Gun type oil burners.

**HOMEASE PRODUCTS DIV., BOGUE ELECTRIC CO.**, 52 Iowa Ave., Paterson 3, N. J.—Booth 716.

**INDEPENDENT OIL BURNER CORPORATION**, 139-24 Queens Blvd., Jamaica 2, L. I., N. Y.—Booths 211 and 213.

In attendance: Gabe M. Marin, Alfred N. Luft, Donald Caldwell.

Exhibiting: Oil burners.

**INDUSTRIAL CORP.**, Ninth at Mulberry, Terre Haute, Ind.

In attendance: J. M. Cline.

**IRON FIREMAN MFG. CO.**, 3170 W. 106th St., Cleveland 11, Ohio—Booth 105.

In attendance: W. J. O'Neil.

Exhibiting: Residential conversion oil burners, commercial oil burners, industrial oil burners, residential oil-fired furnaces and boilers.

**JEFFERSON ELECTRIC CO.**, Bellwood, Ill.—Booth 520.

In attendance: C. T. Harnett, E. A. Belzer.

Exhibiting: Ignition transformers.

**JET-HEET, INC.**, 236 W. 55th St., New York 19, N. Y.—Booth 602.

In attendance: Robert W. Lade, Harry A. King, Charles W. Wood, Edward C. Gagen.

Exhibiting: Domestic furnace.

**S. T. JOHNSON CO.**, 940 Arlington Ave., Oakland 8, Calif.—Booth 535.

In attendance: Robert P. Johnston, Larry Kline, William Thoms, Walter Lees, J. C. Johnson.

Exhibiting: One combination gas and oil hot water supply unit, Econolux heating boiler units, Aquilux. Large variety and sizes rotary industrial and BH domestic burners.

**JONES & BROWN, INC.**, 441 Sixth Ave., Pittsburgh 19, Pa.—Booth 711.

In attendance: G. C. Bates, C. J. Land, P. M. Hutchins, Harry Nabor, Chas. E. Greenleaf, Jack Lewis, C. R. Sieber.

Exhibiting: Ko-Z-Aire Conditioning Units, Ko-Z-Aire Oil Burners.



**THE KEHM CORPORATION**, 135 South LaSalle St., Chicago 3, Ill.—Booth 618.

In attendance: H. R. Coleman, C. G. Newton, B. H. Bornquist.

Exhibiting: Free-Aire oil fired heaters and systems for heating low cost homes and also for all space heating requirements.

**THE KENT CO., INC.**, 167 Canal St., Rome, N. Y.—Booth 608.

In attendance: C. E. Clifford, G. C. Carley, J. W. Jones.

Exhibiting: Kent double suction furnace and boiler cleaner.

**KEWANEE BOILER CORP.**, Franklin St. & "Q" Tracks, Kewanee, Ill.—Booths 101-2-4.

**KING CHEMICAL CO.**, 54 New Haven RR St., Mt. Vernon, N. Y.—Booth 713.

In attendance: Jay Rosenman.

**L. O. KOVEN & BROTHER, INC.**, 154 Ogden Ave., Jersey City 7, N. J.—Booths 122-124.

In attendance: Arthur R. Hanson, Edward K. Wodecka.

Exhibiting: Steel heating boilers, Venko, Waterfilm deluxe model, Waterfilm sectional steel boiler that fits through a 2 ft. door.

**KRESNO-STAMM MFG. CO. (AMERICA), INC.**, 345 Commercial Ave., Palisades Park, N. J.—Booth 120.

In attendance: B. I. Stamm, A. Landow, N. Fleisler, C. P. Scholz, M. Holden.

Exhibiting: "Ball Flame" domestic vaporizing burner, "Vitro Flame" commercial vaporizing burner, "PowRmatic" pressure gun burner, "Perco-Flash" 25L hot water heater.

**THE LAU BLOWER CO.**, 2001 Home Ave., Dayton 7, Ohio—Booths 446-448.

In attendance: W. Wentling, T. I. Bird, H. W. Faulkender, John Burrowes, E. C. Wolford, J. B. Wallace, C. C. Miley, W. J. Lohrey.

Exhibiting: Blowers, oil burner wheels.

**LEWIS ENGINEERING CO.**, Maple & Rubber Sts., Naugatuck, Conn.—Booths 710-712.

**LOVEJOY FLEXIBLE COUPLING CO.**, 5001 W. Lake St., Chicago, Ill.—Booth 444.

In attendance: M. W. Dangel, E. L. Stevens.

Exhibiting: L-R flexible couplings for oil burners.

**MAY OIL BURNER DIVISION, GEROTOR MAY CORP.**, Maryland Ave. & Oliver St., Baltimore 3, Md.—Booths 117-119.

In attendance: C. R. Collins, J. E. Connors, E. R. Schuelke, J. O. Miller, C. L. Colliflower, G. I. Chinn.

Exhibiting: Conversion oil burners.

**MC DONNELL & MILLER**, 1316 Wrigley Bldg., Chicago 11, Ill.—Booth 345.

**THE MERCOID CORP.**, 4201 Belmont Ave., Chicago 41, Ill.—Booths 346-348.

**METROMATIC MFG. CO.**, 21 Henderson St., Everett, Mass.—Booth 510.

**METROMATIC MFG. CO.**, 21 Henderson St., Everett 49, Mass.

In attendance: Fred D'Angelo.

**THE MILLER CO.**, Meriden, Conn.—Booths 210-212.



**DR. ROBERT E. WILSON**  
Chairman of the Board  
Standard Oil Co. (Indiana)

To speak on "Burning Oils" at Silver Anniversary Convention of Oil-Heat Institute of America at Chicago, April 8th.

In attendance: H. S. Beagle, R. W. Delancey, Eric Elam, John J. Phelan, W. E. Blake, W. Gaskell.

Exhibiting: Conversion oil burners—vaporizing type—mechanical draft.

**MINNEAPOLIS-HONEYWELL REGULATOR Co.**, 2753 4th Ave., So., Minneapolis 8, Minn.—Booths 401-402-403-301-302-304-201-202.

In attendance: A. H. Lockrae, H. E. Chapler, Fred Kaiser.

Exhibiting: A 25 year Pageant of Progress—in automatic controls and control systems for oil burner application.

**MONARCH MFG. WORKS, INC.**, 2501 E. Ontario St., Philadelphia 34, Pa.—Booth 354.

In attendance: J. M. Carroll, T. W. Murphy, E. B. Frame.

Exhibiting: Spray nozzles, valves, strainers.

**MORSE-SMITH-MORSE, INC.**, 165 Dexter Ave., Watertown 72, Mass.—Booth 247.

In attendance: John C. Dieselman, William E. Macneil.

Exhibiting: Fusible valves, filters, tank gauges, vent caps and thermal switches.

**L. J. MUELLER FURNACE CO.**, 2005 W. Oklahoma Ave., Milwaukee 7, Wis.—Booth 405.

In attendance: H. P. Mueller, C. L. Hewitt, Jr., F. J. Nunlist, Jr., R. D. Hearne.

Exhibiting: "Climatrol" oil-fired gravity and forced air furnaces, vaporizing oil burners, pressure atomizing oil burners.

**NEWARK TRANSFORMER CO.**, Linden & Park Aves., Linden, N. J.—Booth 414.

In attendance: J. Emil Weissman, Norman A. Lunenfeld, Robert Natol, M. Chaneides.

Exhibiting: Oil burner ignition transformers.

**NORGE HEAT DIVISION, BORG-WARNER CORP.**, 672 East Woodbridge St., Detroit 26, Mich.—Booths 246-248-250.

In attendance: C. S. Davis, Jr., J. W. Oswald, M. A. Straub, G. M. Johnston, A. Michie, E. D. Riebel, G. R. Neumann, J. M. McNamara, J. C. Cooper, H. W. Ford, H. C. Altenburg, W. C. Walter.

Exhibiting: Convertible furnace furnished with equipment for firing with coal, oil, or gas. Conversion oil burner designed to burn the new catalytic oils No. 1, 2, or 3. Model 50B oil burning floor furnace—pressure vaporizing type with output capacity of 54,500 btu, CSR.

**THE OHIO ELECTRIC MFG. CO.**, 5910 Maurice Ave., Cleveland 4, Ohio—Booths 214-216.

**OIL EQUIPMENT MFG. CORP.**, 75 Brewster St., New Haven 6, Conn.—Booth 310.

In attendance: Daniel Kaufman, Arnold J. Alderman.

Exhibiting: Storage tank accessories, oil burner accessories, "King" gauge, stainless steel combustion chambers and baffles.

**OIL EQUIPMENT LABORATORIES, INC.**, Bridge St., Elizabeth 4, N. J.—Booth 109.

In attendance: John M. Wittke, John L. Lehman.

Exhibiting: "Roto flame" oil burners, oil saver boilers, warm air furnaces.

**PENN ELECTRIC SWITCH CO.**, Goshen, Indiana—Booths 314-316.

In attendance: M. E. Henning, A. W. Barr, E. M. Smith, J. R. Nededu, E. M. Ford, O. G. Tinkey, R. S. Penn, A. L. Rubel, G. O. Sanders, K. W. Cash, J. E. Corbett, C. B. Morgan, R. H. Luscombe, N. E. Jennison, H. Gray, R. V. Clark.

Exhibiting: Automatic controls for oil burners. Thermostats, stack switches, limit controls.

**PERFEX CORP.**, 415 W. Oklahoma St., Milwaukee 7, Wis.—Booth 419.

In attendance: J. K. Luthe, C. E. Lewis, Allen Butler, Ben Boalt, Pat Miller, Allen Putt, C. Soderberg, J. McGuire, G. Churchill, C. Campbell, C. Soper, R. E. Toellner, R. H. Pratt, Jack Luthe, J. McMicken, A. Hensel, D. Cook, D. G. Spahr, B. F. Werb, A. Meeg, P. Neess, B. Farnes, D. L. De Vos, J. Baur.

Exhibiting: Complete line of automatic temperature controls for oil fired automatic heating; draft gauge and flue gas temperature indicator for industrial oil burner applications.

**B. A. PETERSON CO.**, 300 W. Railroad, Dowagiac, Mich.—Booth 611.

In attendance: B. A. Peterson, Sr., B. A. Peterson, Jr., C. L. Peterson.

Exhibiting: Combustion chambers, baffles, insulating cement, industrial refractories.

**PETROLEUM HEAT & POWER CO., P. O.** Box 1547, Stamford, Conn.—Booth 433.

**PEZZILLO PUMP CO.**, 1343 West Cumberland, Philadelphia 32, Pa.—Booth 505.

In attendance: A. R. Pezzillo, F. J. Coonan, D. P. Litzenberg, D. G. Lane.

Exhibiting: Circulators, pumps.

**PREFERRED UTILITIES MFG. CORP.**, 1860 Broadway, New York 23, N. Y.—Booth 125.

In attendance: R. S. Bohn, G. W. Bohn, B. K. Breed, G. S. Kaplan, C. R. Schneider, W. H. Bohn.

Exhibiting: Unit steam generator, horizontal rotary oil burner for industrial use, pressure atomizing oil burner for domestic use, Draft A-Justors for fuel savings.

**QUIET-HEET MFG. CORP.**, 135 N. J. Railroad Ave., Newark 5, N. J.—Booth 121.

In attendance: S. L. Peters, R. L. Peters, S. L. Sloan, H. Peters, M. A. Peters.

Exhibiting: Models A, E and G Quiet-Heet oil burners. Capacities 1-25, 2.5-6, 8-18 GPH respectively.

**QUAKER MFG. CO.**, 223 W. Erie St., Chicago 10, Ill.—Booths 112-114.

In attendance: A. T. Atwill, O. J. Long.  
Exhibiting: Pot-type space heaters, air conditioning furnaces, vaporizing-type conversion burners.

**RADIATION FURNACE CORP.**, 230 Bond St., Benton Harbor, Mich.—Booth 616.

In attendance: Sidney Volk, Robert Volk.  
Exhibiting: Radiation furnaces.

**RADIANT UTILITIES CORP.**, 1859 Cropsey Ave., Brooklyn 14, N. Y.—Booth 503.

**THE RAJAH CO.**, 53 Locust Ave., Bloomfield, N. J.—Booth 218.

In attendance: Robert A. Bell, Ernest W. Law.  
Exhibiting: Rajah terminals and tools.

**C. L. RAYFIELD CO.**, 2010-18 S. Halsted St., Chicago 8, Ill.—Booth 501.

In attendance: C. L. Rayfield, E. A. Freudiger, E. W. Girtlen.

Exhibiting: Commercial and industrial oil burners—No. 5 heavy oil, domestic oil burners—No. 3 oil.

**REFRACTORY & INSULATION CORP.**, 327 S. LaSalle St., Chicago 4, Ill.—Booth 719.

In attendance: R. G. Hammer, G. A. Mies, J. R. McCarroll, Miss H. Meyer, E. A. Weber, H. L. Marwick.

Exhibiting: DeLuxe combustion chamber, standard combustion chamber, "Stic-Tite" plastic insulation, hearth cement, No. 3000 refractory cement, super No. 3000, black furnace cement, insulating block, "Moldit" chrome, stoker "Moldit".

**ROCHESTER MFG. CO., INC.**, 66 Rockwood St., Rochester 10, N. Y.—Booth 106.

**RUBY MANAGEMENT CO.**, 620 W. Warrenton Ave., Pittsburgh 26, Pa.—Booth 602.  
In attendance: T. J. Hamilton.

**SAMPSEL TIME CONTROL, INC.**, 600 N. Strong Ave., Spring Valley, Ill.—Booth 543.

In attendance: D. C. Wellcome, F. R. Hulbert, L. E. Schulein.

Exhibiting: Thermostats, day-night thermostats, oil burner controls, gas controls, stoker controls, limit controls for warm air, hot water and steam, damper controls, fire alarms.

**SCULLY SIGNAL CO.**, 88 First St., Cambridge 41, Mass.—Booths 157-158.

In attendance: Frank P. Scully, Carl A. Goddard, G. M. Schutter, Edward Mathey, Frank P. Scully, Jr.

Exhibiting: Ventalarm Signal, Ventalarm Fill-Gard, "FasFill" Connector, automatic pump and motor control.

**THE SILENT GLOW OIL BURNER CORP.**, 1477 Park St., Hartford 8, Conn.—Booth 333.

In attendance: F. W. Hallgren, R. W. Secor, J. Vines.

Exhibiting: Domestic power burners, light industrial power burners, vaporizing burners.

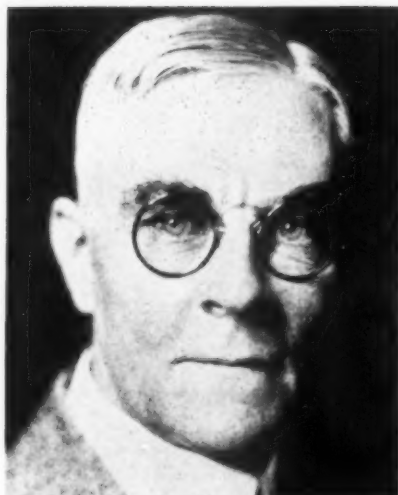
**S. O. S. PRODUCTS CO.**, 282 Nassau Ave., Brooklyn 22, N. Y.  
In attendance: I. S. Pryor.

**STAFFCO ENGINEERING CO.**, 2320 W. Van Buren St., Chicago 12, Ill.—Booth 517.

In attendance: Fred Ravensbeck, J. Schurman, O. Jaffe, A. Schaefer.

Exhibiting: Industrial oil burners.

**STANDARD HEATER & OIL EQUIPMENT CO.**, 245 Cornelson Ave., Jersey City 2, N. J.—Booth 149.



**E. P. BAILEY**

President  
National Airoil Burner Corp.

Toastmaster at OHI Silver Anniversary Banquet-Entertainment at Chicago, April 8 honoring all living OHI Presidents still within the industry.

**STEFECO STEEL CO.**, Michigan City, Ind.—Booth 121.

In attendance: J. G. Gregory, J. P. Powell, M. F. May, Russell Wevang, E. Wandrey.

Exhibiting: Panelox stainless steel combustion chambers, boiler and furnace jackets, baseboard radiators.

**STEWART HALL CHEMICAL CORP.**, Mt. Vernon, New York.

In attendance: L. D. Miller.

**SUNDSTRAND ENGINEERING CO.**, 1325 7th St., Rockford, Ill.—Booth 440.

In attendance: R. H. Gustafson, T. J. Vinke, A. H. Rutledge.

Exhibiting: Oil burners.

**SUNDSTRAND MACHINE TOOL CO.**, 2531 Eleventh St., Rockford, Ill.—Booth 137.

In attendance: B. F. Olson, C. W. Lang, H. O. Wahlmark, O. E. Mayfield.

Exhibiting: Oil burner pumps and fuel units.

**SUPER ELECTRIC PRODUCTS CORP.**, 1057 Summit Ave., Jersey City, N. J.—Booth 600.

In attendance: Henry Winston, L. Lorent, H. Semmel, M. J. Sarver, E. N. Hoffman.

Exhibiting: Oil burner ignition transformers.

**TACO HEATERS, INC.**, 137 South St., Providence 3, R. I.—Booth 215.

In attendance: J. Balter, J. R. Collier, E. T. Houlihan, F. Luft, Jr., J. R. Murphy, R. T. Schoerner.

Exhibiting: Indirect tankless and storage water heaters, circulators, flow check valves, relief valves, reducing valves, Taco-Matic valve, new "Paneltrol" tempering valves, flo-jets.

**THATCHER FURNACE CO.**, Center St., Garwood, N. J.—Booth 151.

In attendance: Carl Sahler, Russell M. Cook, Malcolm C. Beard, Henry S. Downe, Thomas J. Griffin, F. W. Sieffert, L. R. Baughman, C. Meehan.

Exhibiting: "V" series oil-fired air conditioner, "Oilmaster" boiler-burner unit, No. 550 oil-fired air conditioner, No. A-204 oil-fired air conditioner—with vaporizing burner.

**TIMKEN SILENT AUTOMATIC DIV., THE TIMKEN-DETROIT AXLE CO.**, 209 E. Washington, Jackson, Mich.—Booths 449-451-550.

**THE TORRINGTON MFG. CO.**, 70 Franklin St., Torrington, Conn.—Booths 352-354.

**TRIAD PRODUCTS CORP.**, 5113 N. Clark St., Chicago 40, Ill.—Booth 607.

In attendance: H. G. Rice, R. L. Geaslen, R. H. Gough, H. Steele, C. E. Tomlin, C. Weid, E. J. Bamber.

Exhibiting: Boilers, baseboard radiation, convectors, radiant heat panels.

**TURRILL, INC.**, 1035 Woodrow St., Cincinnati 4, Ohio—Booth 707.

In attendance: F. D. Turrill.

**TUTHILL PUMP CO.**, 939 E. 95th St., Chicago 19, Ill.—Booths 415-417.

In attendance: W. J. Wagner, J. D. Young, W. F. Rye, R. Tannehill.

Exhibiting: Complete line of oil burner pumps.

**VIKING MFG. CORP.**, 1747 Chester Ave., Cleveland 14, Ohio—Booths 545-547-549-551.

In attendance: H. S. Frasher, P. B. Patton, T. C. Kitchen, C. W. Smith, L. H. Gary, J. G. Baker, M. C. Cameron.

Exhibiting: Year round air conditioning unit, oil space heater, oil floor furnace, oil water heater, oil boiler, basement type furnace, utility room furnace, "Flatpak" duct work.

**VOLCANO BURNER CORP.**, 3612 E. Tremont Ave., Bronx 61, N. Y.—Booth 709.

In attendance: Wm. J. Coyle.

**WATTS REGULATOR CO.**, 10 Embankment St., Lawrence, Mass.—Booth 542.

**WEATHERALL ENGINEERS, INC.**, 387 Charles St., Providence 5, R. I.—Booth 406.

In attendance: E. R. Benson, R. H. Chadwell, V. H. Duxbury, C. S. Sutton.

Exhibiting: Oil burners, boiler-burner units, water heaters.

**WEBSTER ELECTRIC CO.**, Clark & DeKoven Sts., Racine, Wis.—Booth 206.

In attendance: B. T. Wiechers, E. M. Ford, L. Ehrich, D. J. Munroe.

Exhibiting: Fuel units, ignition transformers, "Thermdrive" (variable-speed blower pulley).

**WHITE-RODGERS ELECTRIC CO.**, 1209 Cass St., St. Louis 6, Mo.—Booths 349-351.

In attendance: Jack Searls, Chas. Taber, C. M. Garner, Chas. Rennecamp, E. C. Robinson, G. R. Gibson, R. V. Burnette, C. M. Morris.

Exhibiting: Oil burner primary control, thermostats and hydraulic-action controls for warm air, hot-water and steam heating.

**WILLIAMS OIL-O-MATIC DIV., EUREKA WILLIAMS CORP.**, 1201 E. Bell St., Bloomington, Ill.—Booths 319, 323, 420.

In attendance: E. H. Davison, T. H. Green, W. L. Sneltsjes, R. G. Pinkerton, W. A. Matheson, Jr., W. E. Connors, J. G. Brown, S. W. Bastable, H. C. Leigh, E. F. Fritz, O. A. Acuff.

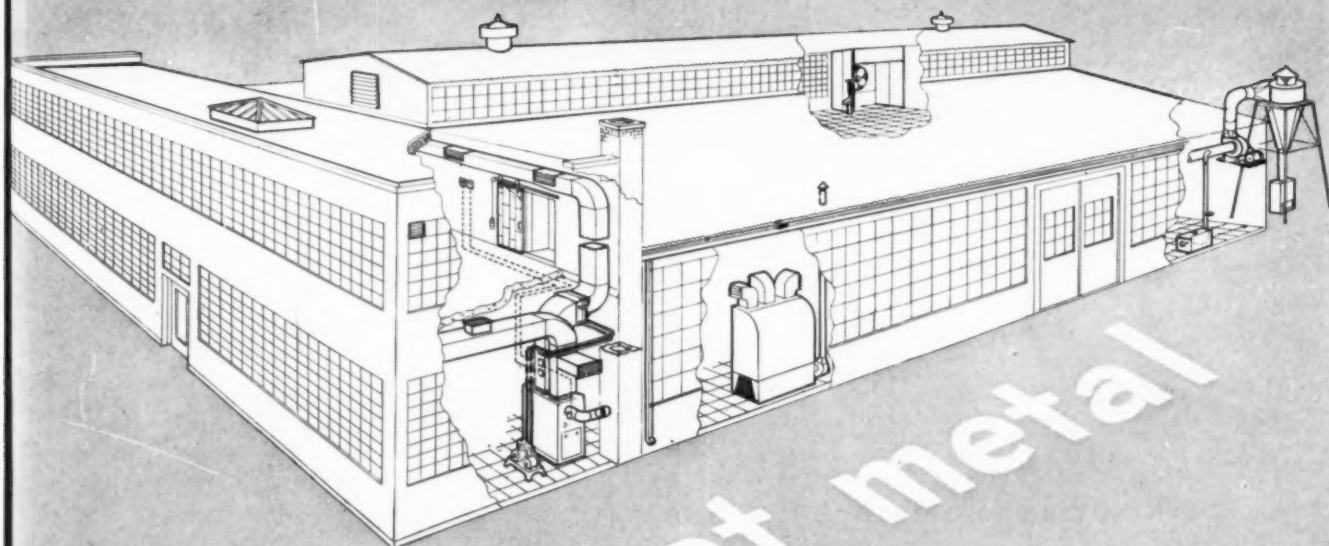
Exhibiting: Complete line of low pressure burners and "Pressur-O-Matic" burners, furnace burner units, boiler burner units.

Exhibit will particularly feature fuel conservation engineering.

**YORK-SHIPLEY, INC.**, York, Pa.—Booths 233-239.

In attendance: S. H. Shipley, M. Landau, E. C. Alft, R. Babcock, C. H. Neiman, R. Mohn, G. D. Frank, E. Hauf, C. Fry, W. Tallon.

Exhibiting: Vaporizing-type, oil fired warm air furnaces, gravity and forced air circulation; packaged boiler units; oil fired water heaters.



# sheet metal *Section*

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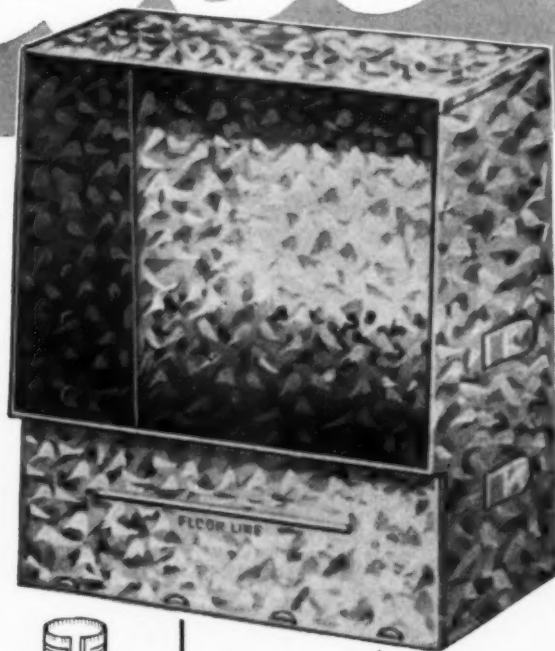
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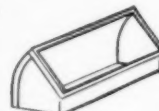
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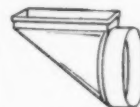
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Buffalo 11, N. Y.  
Chicago 9, Ill.  
Cincinnati 25, Ohio  
Cleveland 14, Ohio  
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Galvanized LockJoint  
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45° Angle



End Boot



Round Volume Damper



Universal Boot



Airflo Tee-Joint



Reverse Elbow



Funnel Floor Pan



90° Top Takeoff



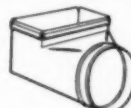
90° Elbow



Adjustable Flue  
Thimble



90° Adjustable Elbow



90° Angle Boot



45° Adjustable  
2-piece Angle



Casing Collar for  
Straight Hood

IN  
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# The Spotwelding Technique

William P. Brotherton  
Ryan Aeronautical Corp.  
San Diego, Calif.

## Second of a Two-Part Series



**I**N SPOTWELDING the assembly, the machine must first be "set-up." This set-up consists of adjusting the arms, electrodes and other elements of the machine to enable it to perform the job. The machine settings are obtained from charts previously established on certification tests of the machine and, of course, will be those settings for the gauge combinations about to be spotwelded. After the set-up is complete, sample test *coupons* are spotwelded and immediately tested. Obviously, sufficient time would not be available for a complete test and for this reason a shear test is sufficient to allow the work to proceed. After the test samples have been tested and approved by the inspector, the welder is ready for production.

The type and capacity of the spotwelding machines will depend upon the materials being spotwelded and their thicknesses. It is recommended that machine capacity in all cases be sufficiently great so that a reserve of capacity is present for all jobs. Operating near the maximum current capacity of the machine

is undesirable due to the fact that the machines are not too stable at the upper limits of their rated capacities.

The approximate welding current required for 18-8 steels is about 4,750 amperes for two sheets of .016" material. For two sheets of .125" material the amperage required is about 13,500. Contrast this with the aluminum alloys in which two sheets of .016" material will require approximately 14,000 amperes, while two sheets of .125" material will require about 35,000 amperes. This difference should be clearly understood because it is on this basis that we can compare and establish the ease with which 18-8 steels can be spotwelded and emphasize some of the more critical aspects of the welding of the aluminum alloys.

The required secondary amperage may be obtained from either the AC transformer spotwelder or a "stored energy type." If an ample power supply is available, the AC welders will function satisfactorily within their rated capacity. However, since the secondary or weld-



**Stainless Steel Firewall for airplane engine is fabricated by spotwelding at Ryan Company.**

ing amperage is directly related to the power in-put through the primary, it must be understood that any variation of the current through the primary will either raise or lower the secondary current used to form the spotweld. This variation may be sufficient to develop inconsistent spotwelds. Power variation has been a problem and still causes considerable trouble when power lines are over-loaded. The installation of a separate transformer for each welder will produce the desired results of spotweld consistency but the expense incurred must be considered. Another approach to this problem of current delivery and supply is the use of the "inter-locking" system where two or more welders receive their current supply from the same transformer. The timing controls the flow of the current so that only one welder uses the power in-put at any given time that a spotweld is made.

In cases where a heavy power loading is the general rule, it is the practice at the Ryan Aeronautical Company to use a condenser discharge or stored energy type of spotwelder. These welders store the primary current until the condenser is loaded before the current can be discharged. This type of welder has reached a high degree of popularity for aircraft spotwelding.

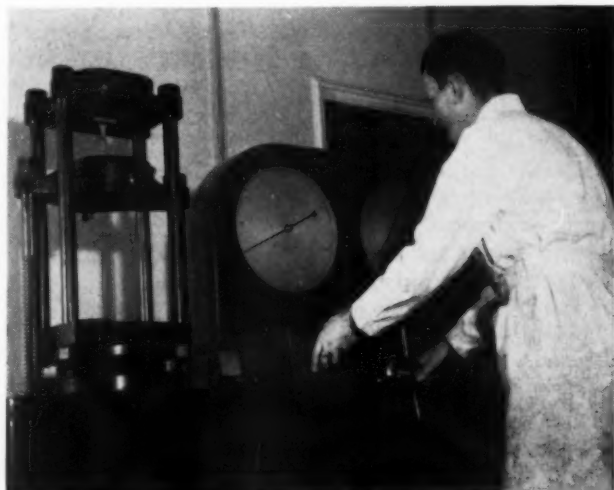
In addition to the delivery of high amperage current, there is another extremely important factor. That is the time interval, or "weld time," during which the current flows. Since welds are made because of

the heat which this current develops, the time that it flows will directly affect the spotweld. This flow is of very short duration and the timing must be quite accurate. Two means are available for controlling this interval: the mechanical timer, which is governed by a synchronous speed motor, and the electronic control.

#### **Specifications**

The spotwelding machine must be certified for each gauge combination used. This certification for the

#### **Running tensile test on spotweld.**



**AMERICAN ARTISAN, March, 1948  
SHEET METAL SECTION**



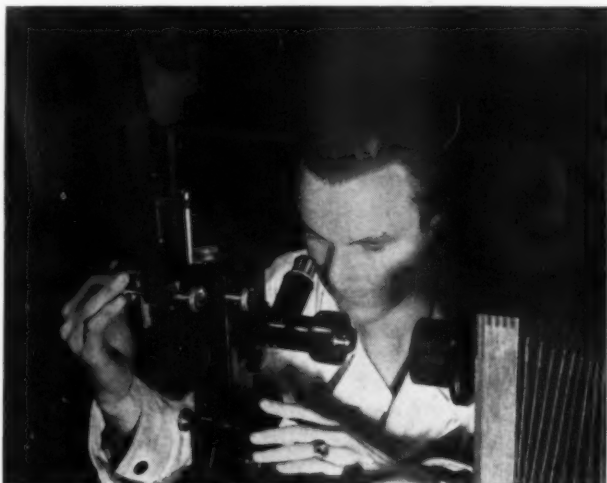
equipment used at Ryan is obtained by meeting the following requirements of specifications PW6 issued by the U. S. Navy, Bureau of Aeronautics:

- (a) 25 specimens shall be made with a single spot on the gauge combination to be certified.
- (b) The spotweld specimens shall equal or exceed the minimum shear value for the lightest gauge in any combination being tested.
- (c) In 21 of the 25 specimens the variation in strength shall not exceed 10% of the average of the 25 specimens. The remaining 4 specimens shall not vary over 20% of the group average.
- (d) 25 single spot specimens shall be sectioned and etched to show the internal structure of the spotweld. These spotwelds shall be reasonably free from porosity and cracks. Certain minor defects may be allowed, providing they are within the specified limits.

There are additional requirements to be met in the specification, but the above are essentially the most important considerations. The requirements of the Army specification covering resistance welding #20011-C are very similar to the requirements of the Navy specification mentioned above. The Navy specification requires tension tests on spotwelds which are not indicative of the service loads to be expected, but which will definitely establish such other factors as uniformity of spot diameter, penetration and soundness of the spotwelds.

The Army specification does not require tension tests on spotwelds. From these specifications there are two conclusions which can be drawn: The one of greatest importance is that spot or resistance welding is an accepted method of fabrication, and that the process must be carefully controlled in normal, routine shop operation in order to consistently be able to meet the requirements of the rigid tests covering the certification of spotwelding equipment. It should also be noted that the amount of inspection to which this process is subjected, both in certification of the equipment and during fabrication, exceeds that required for arc and gas welding. For this reason it is logical to assume that considerable improvement can be expected in the future to reduce the severe inspection

#### Metallurgist analyzes spotweld.



requirements and point the way toward a demand that the equipment be more fool-proof.

It is the practice for the aircraft companies to set their minimum shear strength requirements five to ten per cent above the minima demanded by the Army and Navy specifications. This practice safeguards the fabricator so that in no case will a spotweld on the "border line" of the company's minimum shear value fall below the AN standards.

Shear strength values for a given gauge combination, taken over a period of months, have proved that the shear values from ten to fifteen per cent above company minima are the easiest to maintain. An adherence to these percentages will result in satisfactory spot weld consistency.

It may seem a bit unusual but by holding to these figures the natural tendency toward obtaining extremely high values over the minimum requirements will be avoided. These extremely high values are undesirable because uniformity in shear values between individual spotwelds in the same assembly is difficult to maintain. Even though all of the values obtained are above the minimum required, a wide variation in strengths above this minimum still represents spotweld inconsistency that should be avoided. At the Ryan Aeronautical Company we find that the larger the weld area, the less the ductility and the extremely high spotweld values which can be obtained for a short time are accompanied by erratic results.

#### Keep Electrodes Clean

In spotwelding the assembly, the operator must exercise care to keep the electrodes clean at all times. The aluminum alloys are prone to surface alloy with the copper alloy electrodes. When this occurs the increased resistance that develops at the point of the electrode makes for irregular welds and prevents uniform current delivery. The operator should see to it that the edge distance and spacing is properly maintained and also that the spotweld pattern is symmetrical and uniform in size.

During production runs, the inspector will check the machine at regular intervals for shear strength and appearance of the spotwelds. At longer intervals metallographic examinations will be conducted. This metallographic examination can be conducted by the men in the shop by simply sectioning through the spotweld, etching lightly and examining with a magnifying glass. In cases of doubt, the parts can be referred to laboratory technicians for complete metallographic examinations. Should the shear strengths be below the allowable minima or should such internal defects as cracks and inclusions exceed the allowable percentages, the machine is removed from production until settings and adjustments are made that will produce satisfactory results.

Due to the fact that there are so many variables which can cause defective spots, a word of caution is injected here. In making set-ups, the operator or set-up man should be aware of the fact that improper cooling of the electrodes, improperly dressed tips, too wide a variation from standard settings, improperly cleaned materials, as well as many other factors can produce spotwelds of unacceptable consistency. For

(Please turn to page 116)

# Pattern Development for Heavy Gauge Blow Pipe Fittings

By William Neubecker

## Butt Welded Breeching

FULL page drawing number XVI shows how the patterns are developed by triangulation for a breeching from oblong with semi-circular ends to round. Fig. 1 shows the plan and elevation in its proper relative position. As both branches are similar it is only necessary to draw a one-half plan and elevation in practical work. Take a reproduction of either branch, in this case the left one, and trace it as shown in Fig. 2. Now take a tracing of the quadrant *A* in plan in Fig. 1 and reproduce it in Fig. 2 on the line  $6-3^\circ$  as shown by  $6-3^\circ-3^\circ$ . Extend the line  $6-3^\circ$ , so that both horizontal and vertical lines  $3^\circ-3^\circ$  are similar and draw the one quarter ellipse from  $3^\circ$  to 1.

On the line  $f-a$  in Fig. 2 reproduce the one half sections of the oblong shown in plan in Fig. 1.

### Finding the True Lengths

To avoid a confusion of lines in so small a drawing, the quarter circle, the quarter ellipse and the quarter circles in the oblong in Fig. 2, have been divided in two spaces each, as shown by  $6-5-3^\circ$ ,  $1-2-3^\circ$ ,  $a-b-c$  and  $d-e-f$  respectively. From 5 in the quarter circle, 2 in the quarter ellipse, and  $b, c, d, e$  in the quarter circles in the oblong, draw lines at right angles to their respective base lines and obtain points of intersections  $5^\circ, 2^\circ, b^\circ, c^\circ, d^\circ$ , and  $e^\circ$ . Now connect solid lines from  $5^\circ$  to  $e^\circ$ ,  $3^\circ$  to  $d^\circ$ ,  $3^\circ$  to  $c^\circ$  and  $2^\circ$  to  $b^\circ$ . Connect these points by dotted lines the *shortest way across*, as shown. The lines so drawn, will represent the bases of triangles to be constructed whose altitudes will be equal to the heights in the quarter circle, the quarter ellipse and the quarter circles in the oblong.

The true lengths of the dotted lines are shown in Fig. 3. For example: To find the true length of the dotted line  $6-e^\circ$  in Fig. 2 place this distance on the

horizontal line  $6-e^\circ$  in Fig. 3. At right angles to  $6-e^\circ$  draw the line  $e^\circ-e$  equal to  $e^\circ-e$  in the semi-oblong in Fig. 2. Draw a line from 6 to  $e$  in Fig. 3 the desired true length. Use the same procedure to find the balance of the dotted true lengths. By comparing the numbers and letters in both Figs. 2 and 3 will give a clear understanding. In a similar manner find the true lengths of the solid lines in Fig. 4. For example: To find the true length of the solid line  $3^\circ-d^\circ$  in Fig. 2, place this distance on the horizontal line  $3^\circ-d^\circ$  in Fig. 4. At right angles to  $3^\circ-d^\circ$  draw the heights  $3^\circ-3^\circ$  and  $d^\circ-d$  obtained from similar numbered heights in Fig. 2. Draw the solid line from  $d$  to  $3^\circ$  in Fig. 4 the desired length. Proceed in this manner for the balance of the solid true lengths.

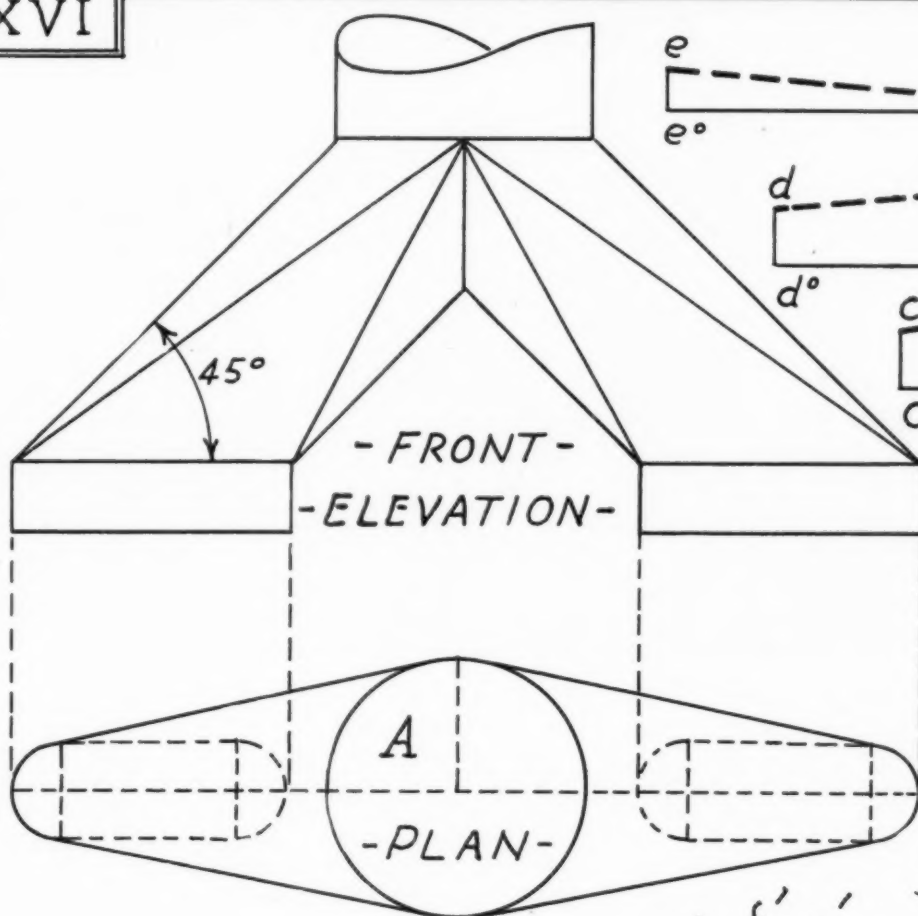
### Developing Half Pattern for Transition

Take the distance  $c-d$  in Fig. 2 and place it as shown by  $c-d$  in Fig. 5. Now with  $3^\circ-5$  in the quarter circle in Fig. 2 as radius and 3 in Fig. 5 as center, draw the short arc near 5, which intersect by an arc with a radius equal to the dotted true length  $d-5$  in Fig. 3. With a radius to  $d-e$  in Fig. 2 and  $d$  in Fig. 5 as center draw a short arc near  $e$ , which intersect by an arc struck from 5 as center with a radius equal to the solid true length  $5-e$  in Fig. 4. Proceeding in this manner will complete the one half net pattern shape shown by  $6-f-a-1$ . If a full branch pattern is desired, reverse the half pattern opposite the line  $6-f$ . In this connection it is proper to say, that in full size developments of the transition in Fig. 5, more divisions must be used in the three semi-sections in Fig. 2.

The collars shown in the front elevation in Fig. 1 can be made as wide as desired with a girth equal to twice the semi-oblong shown in Fig. 2.

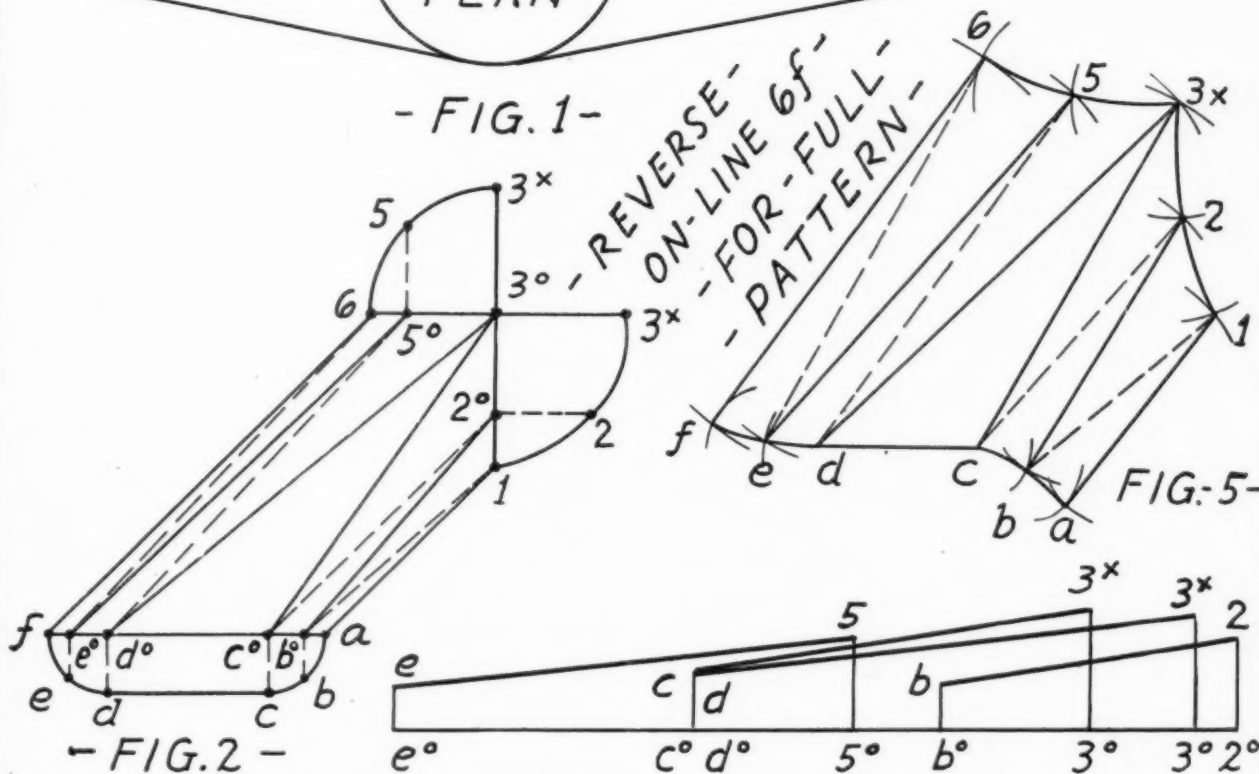
# PATTERNS-FOR-HEAVY-GAUGE-BUTT WELDED-BREECHING

XVI



- FIG. 1 -

REVERSE-  
ON-LINE 6f-  
FOR-FULL-  
PATTERN-



- ALL RIGHTS-RESERVED - FIG. 4 - BY- W.N. -





Checking the timing sequence of a spotwelder with an oscillograph

(From page 113)

this reason, at this point in the operation, the production man can save himself considerable difficulty by exercising his full ability to do a good job in setting up the machine.

### Inspection

The inspection of the spotwelded assemblies and parts is an important phase of the work. The inspector is confronted with the same problem which faces an inspector of arc welded material in that the method of inspection and testing is non-destructive. Following is listed in sequence a few general suggestions which, if followed by the inspector, will give him sufficient information to accept or reject the part: He should inspect

- (1) For the appearance of the welding as to shape and size of the spots.
- (2) The spacing of the spotwelds.
- (3) The center of spots for it is here that cracks are more likely to occur.
- (4) For *flash* both internal and external.
- (5) For spotweld indentation.
- (6) For sheet separation.
- (7) For surface burning.

Correlate the above with shear test data and metallographic examination conducted earlier.

The inspector is cautioned to bear in mind that an exterior appearance of a spot on the face of the sheet is not a true indication of the internal size of the spot. He is cautioned to be factual and objective in his analysis.

Should the above enumerated inspections show the spotwelding to be within the accepted allowances, the assembly should be approved.

There appears to be no reason why the field of spotwelding cannot be widened to include many more primary structures. Quite a few applications not now considered suitable for spotwelding can be rather easily modified to make them acceptable for this process. The manufacturers of spotwelding equipment are constantly improving the electrical systems to make the machines capable of more uniform and consistent operation.

The flexibility of the equipment, the speed and economy of the operation, together with the fact that no weight is added, certainly challenges the designer and manufacturer to use this type of fabrication to the fullest.

### Aluminum Use Booms

THE INCREASE IN USE OF ALUMINUM since the end of the war has been rather staggering in view of the general impression, previously, that our war-expanded aluminum capacity could never be fully utilized in peace time. In 1947 aluminum was used at four times the 1939 rate and only about one-third below the peak wartime consumption.

In addition to the large amounts of aluminum used in heating and ventilating it is being turned out as window frames, roofing and siding for buildings; electric cables, farm equipment, railroad cars and similar items. Automobile manufacturers are making more and more component parts out of aluminum to such an extent that at peak auto production rates they might use as much as half of the current aluminum output.

# Design of Waste Removal Systems (Part VI)

By H. M. Nichols  
Industrial Dep't., Sturtevant Div.,  
Westinghouse Electric Corp., Hyde Park, Mass.

**H**OOD design is complicated by the fact that conditions vary extensively, ranging from nearly complete enclosure of the source of fume to the need for an exhaust hood with sufficient clearance to avoid interference with the manufacturing process. The removal of fumes by means of exhaust hoods requires a movement of air at the point of dispersal of fumes at sufficient velocity to divert them into the hood opening. Hoods should be placed as close to the source of fumes as possible, since the effectiveness of an exhaust hood decreases very rapidly as the face of the hood is moved away from the source of contamination, as shown by constant-velocity curves evolved for the open end of a round pipe. These curves show that a suction hood cannot capture fumes at a considerable distance from the mouth of the hood. Thus at a distance from the face of the hood of 60% of the orifice diameter, the air velocity along the axis is slightly under 20 per cent of the average face velocity, and still less away from the center line. If the face velocity were 2,000 fpm, the

maximum axial velocity at a distance of 0.6 diameters would be slightly under 400 fpm.

When the flow of air into a hood is unobstructed, the following formula is useful in determining the air velocity at any point along the axis of the hood.

$$V = \frac{0.1Q}{b^2 / 0.1A}$$

where

V = Velocity in feet per minute

A = Area of hood in square feet

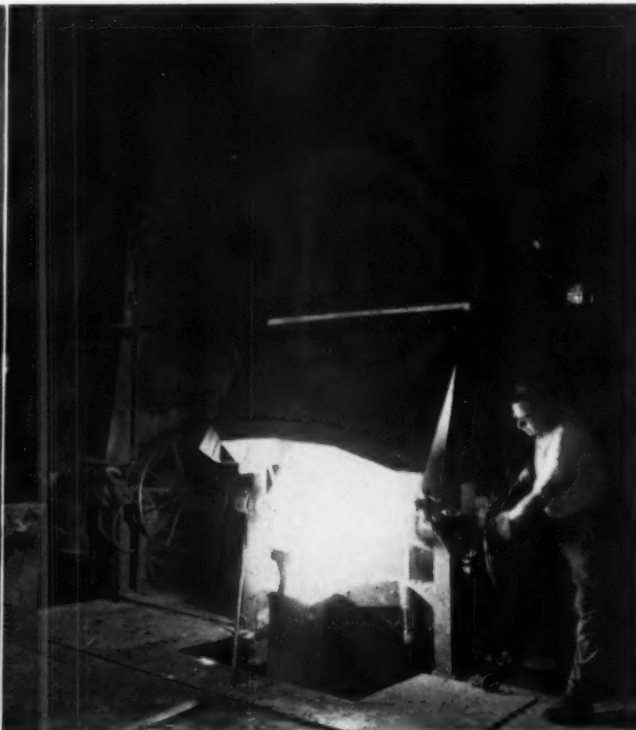
b = Distance along axis in feet

Q = Volume of air handled in cubic feet per minute

It is quite evident that the zone of influence of an exhaust hood is narrowly restricted to the immediate region of the face of the hood, and consequently exhaust hoods must be placed close to the source of the material to be controlled, or must enclose the source, or must be placed so that the natural movement of the fumes is towards the hood mouth. Flanges surround-



Furnace room before completion of fume removal system.



Same room after fume control equipment went into operation.

ing a hood opening reduce the air flow from the ineffective regions back of the hood, and thereby increase its effectiveness by forcing the air to flow from the zone directly in front of the hood. The height of the flanges should preferably be one-third the depth of the hood, and under such conditions the air volume for a given velocity in the effective zone will only be about 75 per cent of the air volume required by an unflanged hood.

#### Slotted Blow and Exhaust Hoods

Slotted hoods are used for exhausting from plating tanks and similar equipment where the operations are such that overhead canopy hoods cannot be used. The slots should be 1½ inches wide if flanged and 2 inches wide if not flanged. The volume of air should be based on a minimum of 150 cfm per sq. ft. of tank area. Slots should be located in three sides of tank. On tanks wider than 3 ft. the slot should extend along both sides and one end.

Tanks over 5 feet wide are difficult to control with the usual exhaust slots, and in such cases combination blow and exhaust hoods may be used. The pressure slot width will range from ½ to 2 inches. The air volume supplied by the pressure fan should be ¼ of

the volume handled by the exhaust hood. The exhaust hood should remove at least 200 cfm per square foot of tank area.

#### Down Draft Hoods

Down draft hoods are desirable when the contaminating vapors are heavier than the surrounding air, and there are no rising air currents to be counteracted. If the vapors are hot, even if they are heavier than air, the natural tendency will probably be to rise.

#### Average Air Velocities for Fume Hoods

Required air velocities for proper fume control will vary with the local conditions, especially the severity of the fumes, the degree of hood enclosure and the presence of cross drafts, and these factors should be considered in applying the constants in the following table:

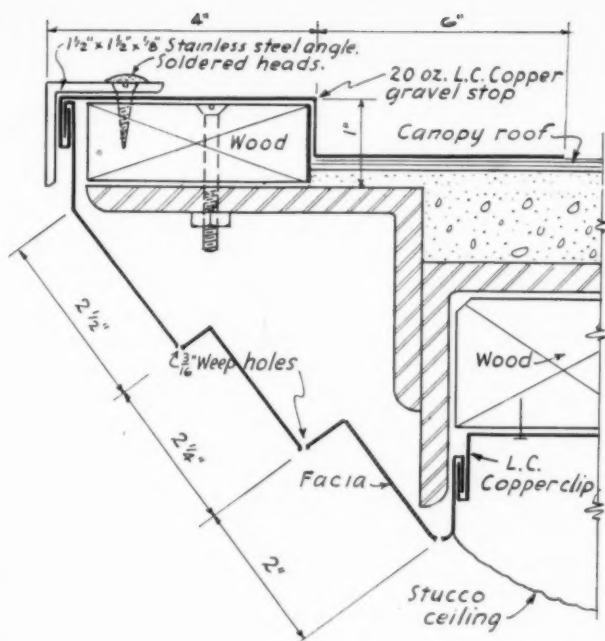
1. Double hoods are usually applied at around 75 per cent of the face velocity of a corresponding canopy hood, and with a velocity of 1000-2000 fpm through the slot at the periphery of the hood.

2. Canopy hoods with side enclosures are usually applied at 100-125 fpm velocity over operating area of hood.

AVERAGE AIR VELOCITIES FOR FUME HOODS

PROCESS	TYPE OF HOOD	AVERAGE AIR VELOCITY fpm
Chemical Laboratories	Enclosed hoods, sliding door	50 to 70 fpm over gross opening
	Enclosed hoods, open front	70 to 90 fpm over face of hood
	Down draft table hoods	90 to 125 fpm over fume producing area of table
	Enclosed hoods in air conditioned laboratories	Exhaust as above plus a supply of outside air equal to 90% of exhaust air
Degreasing	Canopy hoods	125 fpm over face of hood
	Slotted hoods for tanks up to 3 ft. wide	1500-2000 fpm through 2 inch slots
Dry Cans, Padders	Canopy and special hoods and Slashers	25 to 35 cfm per sq. ft. of drying cylinder surface, plus exhaust of 150 fpm over face area of mangle and size box hoods
Electroplating	Canopy hoods for tanks up to 2 ft. wide	125 fpm over face of hood
	Canopy hoods for tanks over 2 ft. wide	150 fpm over face of hood
	Slotted hoods for tanks up to 2 ft. wide	2000 fpm through 2 inch slots
	Slotted hoods for tanks over 2 ft. wide	2500 fpm through 2 inch slots
Electric Welding	Portable hoods	200 fpm over face of hood
	Open front booths	100 fpm over face of booth
Kitchen Ranges	Canopy hoods	100 to 150 fpm over face of hood depending on size and use
Metal Spraying	Open front booths	Lead—200 fpm over face of booth; zinc and other metals 125 to 150 fpm over face or booth
Pickling Metals	Canopy hoods	200 fpm over face of hood
	Slotted hoods	200 to 250 cfm per sq. ft. of tank, Vel. = 2000 fpm through slots
	Blow and Exhaust	Exhaust 200 to 250 cfm per sq. ft. of tank. Vel. 2000 fpm through slots. Blow 50-75 cfm per sq. ft. of tank. Vol. 3000 to 5000 fpm
Rubber Mixing Rolls	Canopy hoods	200 fpm over face of hood
	Double hoods	2000 fpm through 1½ to 2" slots
Steam Kettles	Canopy hoods	150 fpm over face of hood
Varnish Kettles	Canopy hoods	200 fpm over face of hood





## Stainless Steel Marquise

R. C. Nason  
Long Island, N. Y.

THE growing use of stainless steel for architectural decoration and protection in high class construction is evidenced in several recently completed marquises fabricated and installed by F. Munder & Sons, L. I. City, N. Y., sheet metal contractors. These examples are offered here partly because they appear to point out the soundness of combining the two metals and partly because of new design features.

In one new structure, the store of B. Altman Co., in Manhasset, L. I., the general construction is of field-stone and sandstone. Its 640-ft.-long marquise, embracing all but one corner of the building, has a 10-ft. overhang. Though its ceiling is of rounded cream stucco, its front has a fascia, or cornice, consisting of an 8 1/2-in.-deep course of brake-formed, 24-gage stainless steel in No. 4 polished finished.

This metal junction piece between the marquise ceiling and its roof, that is, the fascia, slants inward 45 deg. Its contour comprises three steps, each approximately 2 in. deep. In addition to protecting the vulnerable outer edge at this point the stainless steel work sets off the marquise strikingly.

Slag is the roofing of the marquise and it was well flashed at the wall by 20-oz. through-wall leadcoated copper. Its apron runs out 1 ft. onto the roof all around, with the outer edge copper-nailed to the deck on 24 in. centers.

Roof edge flashing, of the same sheet metal, extends inward almost 1 ft. This includes coverage of a 1-in.-deep gravel stop wood strip. The flashing locks into the fascia at its outward edge. For anchorage there are leadcoated copper clips folded into the top fascia fold and copper nailed to the basic wooden stripping at their inward ends. Further anchorage of the gravel stop area involves the use of stainless steel screws that were passed through the sheeting as well as the special trim 10 in. apart. Clips are on 24 in. centers and are 1 3/4 in. wide by 2 in. long.

There was attached by the sheet metal contractor as part of the finishing work, a continuous corner trim course of stainless steel extruded angle 1 1/2 in. by 1 1/2 in. by 1/8 in. thick. These trim sections are 16 ft. long. Holding screws were well soldered over their heads as the front of this angle trim was left free, as well as joint free, it merely caps the flat metal sheeting.

From photos here shown one observes the marquise fascia's three graduated steps, formed by the sheet metal contractor on their shop brake. The top step is 2 1/2 in. deep, an intermediate step is 2 1/4 in. and the bottom step 2 in. deep. Each is set back 1/2 in. So, of the total fascia depth of 8 1/2 in., 6 3/4 in. makes up steps and 1 1/2 in. the flat sheet beneath the extruded edge trim outlined.

Of the several interesting design features in this work one is the fact that the fascia sections were abutted in an arrangement in which the section ends are joined by tongue and slot, the former slipped into the latter. This arrangement is expected to compensate for possible side movement of the sheet metal under adverse weather conditions.

Canopy described on following page



Ordinary precautionary measures against sheet metal movement are familiar to most readers. For example, with copper one usually looselocks opposing edges at critical points to permit movement. But in this new store building wherein stainless steel is the metal involved there were required three 1½ in. (protrusion) by 1½ in. wide "tongues" per fascia section end. At the other ends of sections the sheet metal contractors had to solder on matching slots for the tongues. Both tongues and slots are 16 gauge stainless steel. Other than slipping the tongues into their slots no other end fastening was provided at these junction points.

To prevent laying difficulties inherent to overly snug fitting of fascia sections the slots were made ⅛ in. wider than tongues. This allowed occasional slight tailoring of tongues on location to insure precise lining up of fascia bend lines. These lines had to be exact, otherwise they would run off in laying and ruin the appearance of the work. If they ran off much the formed sections would be useless. Of the 80 sections pressbraked only two had to be discarded.

It is recognized that there might occur some slight gaps between fascia sections in winter due to contraction. It is further anticipated that this might be as much as 1/32 in. As the work was laid in summer it is not expected that joints will pile up, or overlap, due to summer weather creepage. Should there be slight gaps in winter these probably will be insufficient to be important. Since the fascia is anchored at top and bottom by clips, metal movement has to be lateral.

Should weather leak into the interior, or behind the fascia, results might be bad enough at times to damage the stucco ceiling of the marquise. So, the sheet metal contractor furnished matching weep holes 3/16 in. diam. each and 24 in. on centers in the lower three folds of the fascia. These holes also help prevent the formation of interior condensate.

Yet another interesting construction feature is that the outer marquise ceiling edge does not meet the fascia base fold but ends ½ in. distant from it. This makes a ½ in. gap, or slot all around. Despite its appearance in the finished work, which might look

odd to laymen, the opening provides required ventilation for the marquise interior. Stainless steel screening was attached to keep out insects and dust.

Related to the foregoing work by use of the same metals and erected by the same contractor, are two stainless steel marqueises just finished for the Schaefer Brewing Co. in Brooklyn, N. Y., to embellish and protect two entrances to a large, new office building. Not so ornate perhaps as the store marquise because the metal is in mill finish versus polished finish in the store work. Nevertheless, these canopies represent good craftsmanship.

The marquise over a side door is 7 ft. long by 3 ft. 6 in. overhang, that over the front entrance is 18 ft. long by 5 ft. overhang. Both were flashed with, and have Flatseam roofing of, 20-oz. lead-coated copper. They were also underflushed at the wall and have stainless steel flat sheet ceilings. Centrally in both ceilings were inserted 8 in. by 10 in. ground glass light panels set in 10 in. by 12 in. frames that were screwed to framing, this arrangement for ease in changing lamps.

The frontal and side outer marquise faces have swedge courses that were shop formed by the sheet metal contractor. Corner sections were rolled in generous radii and screwed into position against suitable interior wood framing. To them were attached with loose locks side and front straight face sections. The loose locks provide for weather movement.

Another point of interest in the smaller of the discussed marqueises is the use of two roof side troughs that protrude 3 in. They were made of 20 oz. lead-coated copper and run inward the same distance where they were flashed to the roofing. The latter was gently pitched towards the troughs. Trough sides, simple 90-deg. flanges, are 2 in. deep. Thus drainage goes directly to the soil without the aid of leaders. It was pointed out by the contractor that this arrangement would not be possible in some areas nor on large roofs but is allowable for small roofs such as the side door marquise here referred to. The same contractor handled the entire sheet metal work including roofing.

Store marquise before application of stucco ceiling, fascia shown



Finishing touches being added to marquise, ceiling in place.



# Tools and Their Uses

*A series dealing with the various tools that are used in and adapted to sheet metal work. The articles will discuss common uses as well as unusual applications that may not be familiar.*

**By Ernest E. Zideck**  
Sheet Metal Consulting Engineer

## Turning-Beading Machines

THE variety of work that these small turning-beading machines can be used for is illustrated in the several views in Fig. 1, below. The illustrations are reduced diameters of tubes, or pipes; with the beads and upturns held to their approximate full size. No beading in flat sheet is shown, because the small forming discs are designed for round objects (curved), and in the flat sheet the impressions usually result in buckling the sheet metal. We can use the machines on flat sheets, however, impressing reinforcing beads or ornamental designs, if we do so gradually, starting with about 1/16 of an inch depth, and increasing the depth of the impression in several runs of the sheet through the forming discs. The small turning machine is especially valuable if we need a kind of beveled edge in the sheet, an upturn of the edge in widths from 3/16

down to less than 3/32 inch, which cannot be done in any other machine. Commonly, an upturn of less than 1/8 inch is used, on a degree of less than fifteen, when we want to insure a tighter fit of the upper sheet over the lower sheet. This small upturn, inverted in a pipe of larger diameters, will provide a tight fit of the inserted joint against the inward-bent edge of the female end of the pipe. In any round or curved construction the upturn (and all other beading-impressing) is done after the sheet has been joined in its seam or riveted lap.

Viewing the common inverted bead in (A) of Fig. 1, with its equivalent (B) in the opposite direction (to the outside of the pipe), we see that this bead can be employed for either distancing the inserted, or overlapping, joint of the pipe; or for reinforcing the pipe

*Fig. 1 Approximate Sizes of Beads and Turns (reduced diameters)*

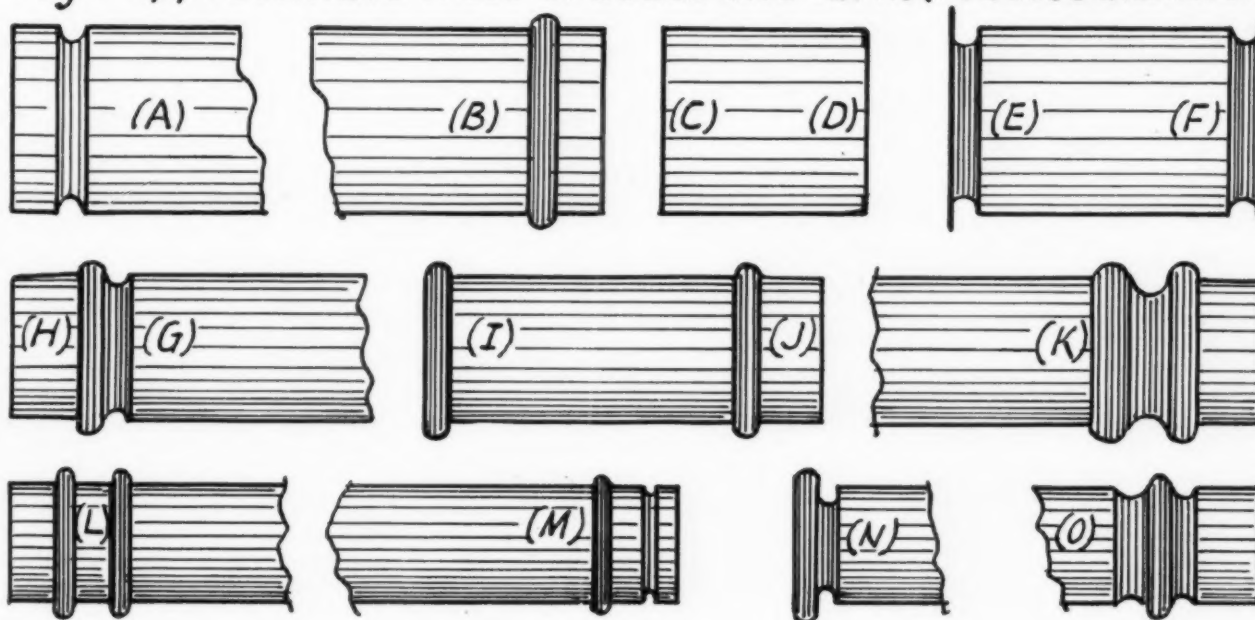
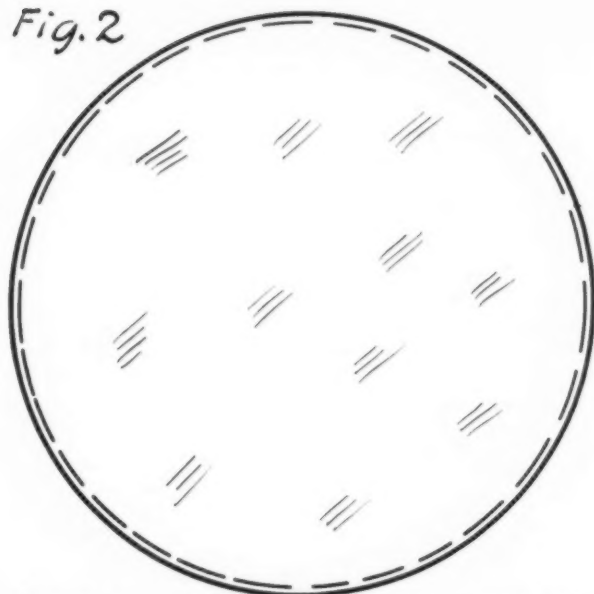


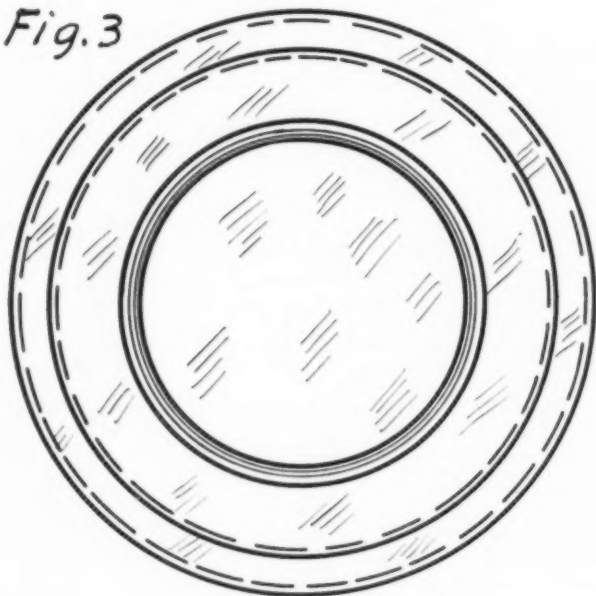


Fig. 2



Lap and seam upturns (C)

Fig. 3



(A) Lid shaping



(B) Raised bottom

Upturns in  
bottoms and lids

if made of soft material, such as copper, which is liable to cave in with the application of very hot soldering irons which copper does require. At (H) we see the common crimped pipe-lap, with (G) also used for greater rigidity of the metal. Commonly, the crimped margin of the pipe terminates in the single bead as shown at (J). Ornamental and reinforcing impressions in the round or curved constructions are shown at (K), (I), (M), and (O). This beading is not difficult, owing to the wide margin of the metal contacting the gage. At the same time, if we adjust the discs to the full depth of the impression desired, we shall experience buckling of the metal and deformation of the pipe or object we work on. If the bead is large and deep, as of (K), it is best to start beading gradually, adjusting the discs deeper and deeper as the initial impressions have been made. If we do this, the bead will be uniformly smooth and the pipe will remain in its true shape.

### Edge-Turning

The turning of the edges, as of (C) and (D), requires more care in holding the metal tight to the gage, so that it does not escape from between the discs. Again it is better to do the upturn gradually, instead of pressing the discs together right at the start. The inverted turn (C) is shown completed, although the machine will leave it open at about 60 degrees. The more exacting beading is shown at (E), (F), (I), and (N), in which the operator must hold the metal edge to the gage by force, because the bead is made in the edge itself, as of (F). These marginal beads are used for seam-joints, better illustrated in Fig. 4 and 5; and may also be used for a "closed" bead, or for wire-inlaying. — It is true that sheet metal work in our contemporary practices is getting away from much of the beading, wire-inlaying and ornamentation by impressions, formerly almost universal; and that in the majority of shops only the crimping rolls are still largely used, for easier joining of pipe sections. At the same time there arise calls for other than routine work; and in these cases the small machines are almost a necessity.

### Special Jobs

One of such necessities is work on bottoms and lids, depicted in Fig. 2 and 3. — Calls for this kind of work, providing a bottom or a lid to some construction or object, are rather frequent in any shop. If we have no dies which would shape the parts in a press, we have only two methods of doing the work: by hand; or by the use of the turning-beading machines. Hand-work is obviously little done nowadays, since the men have been trained for machine work almost exclusively; and their recent experience has been along those lines. At that, we cannot fashion more than the "upturn" (C), by hand (productively), so that if we have this sort of work to do, we could not well do it without the small machines. The upturns (C) are quite common in any shop, and in making them we again need the familiarity with the respective discs in the machine, which it takes to accomplish the formation. If we work galvanized sheet, which might peel off its coating if the metal is pressed tight, between the regular edge-turning discs, we can avoid this damage to the metal

(prevent the affected place rusting), by our use of other small diameter beading discs, as we should use in the formations (E) and (F) in Fig. 1. — The handling of the metal in these discs, for this formation, is slightly more exacting than it would be in the standard edge-turning discs, but once we get used to it, we can do the work just as quickly, and with less buckling of the metal-edge.

If we want to shape the lid ornamentally, or raise the bottom, somewhat on the order shown at (A) and (B), in Fig. 3, we must start the forming on the inside bead or upturn, progressing towards the outside of the lid or bottom; this, because we should at all times gage by the sharp edge of the metal, this edge being smoother and contacting the gage better than the upturned-edge metal would. It is not necessary, in smaller diameters of lids or bottoms, to raise the metal by hammer or other means: the gradual beads or turns near the outside of the circle will by themselves do the raising: the elevating of the middle portion of the metal above the beaded or upturned outer portion. The "upturns" in this connection should not exceed  $\frac{3}{32}$  or  $\frac{1}{8}$  of an inch; otherwise the metal would buckle, disfiguring the levelness of the part. If we want a more pronounced "raise" in the lid or bottom, we can obtain it by more numerous, individual upturns in the metal.

#### Bead Reinforcement

Proceeding to the illustration in Fig. 4, we see where the small turning-beading machines come in handy; though the depicted can is only one of similar constructions which might have different uses, at the same time not precluding similar modes of joining; reinforcing, respectively. (A) is the body of the product, with a reinforcing bead near its upper end, a closed bead reinforcing the "rim" at its bottom end, and an inverted bead upon which comes to rest the upturned bottom, (F). The bead in the bottom margin of the rim is formed as shown at (G), above in the drawing, the operator then manipulating the bead in the female disc with the upper disc replaced by a "flat" or a wider male disc, which is pressed down gradually, until the metal-edge closes over the cavity of the bead. Similar processing is applied to the throat part (C), which also is so reinforced in its upper end. Wire can be inlaid in heavier construction, the closing of the metal over the wire similarly effectuated.

The funnel-like part (B) is provided at its wide end with open bead as shown, so that when body (A) is inserted into (B) the edge of the bead closes tightly over the outside of (A). This tightness can be achieved by running the bead of (B) through the discs until the metal closes to the required degree. The upper end of (B) is turned out, in the turning discs, to receive a lap into (C) and a tight fit into it. The collar (D) is provided with out-turn for single seam, as shown, with the reciprocating turn in lid (E) sliding over it, closed over it by hammer or eventual manipulation in the turning machine. This construction can be of an assembly of parts, tightly fitting one into the other, held together securely enough by the tight fit, for completion by soldering; brazing eventually. Certain products exposed to the heat of a furnace, smoke duct particularly, can be fabricated of heavier sheet metal,

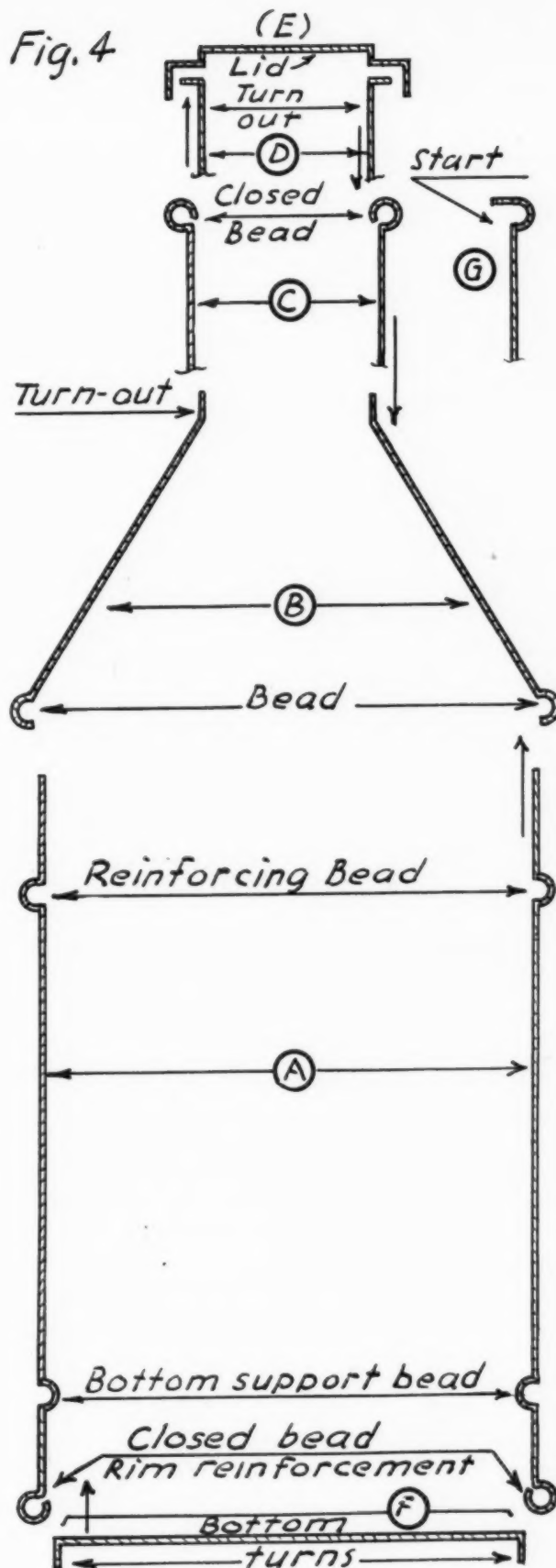
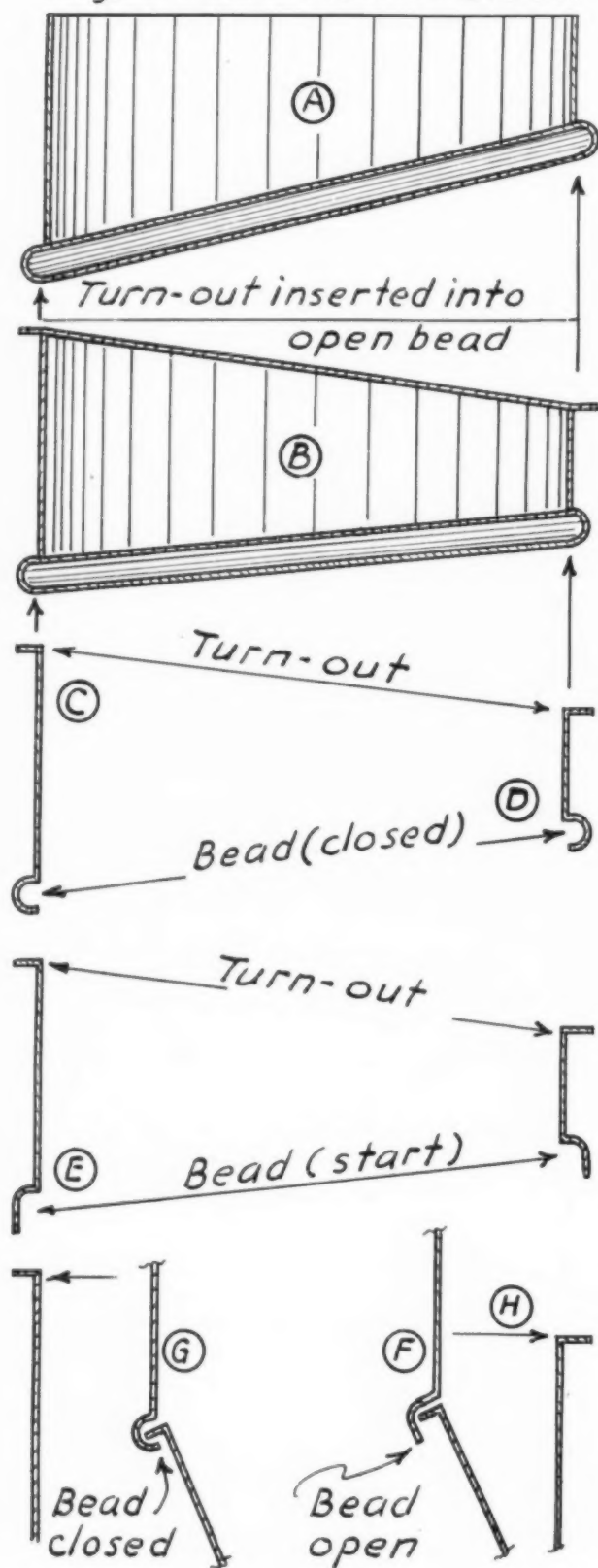


Fig. 5 Solid Seamed Elbow



24 or 22 gauge, the parts joined by brazing; and if we provide beads in the metal as shown at the juncture of (A) into (B), we shall profit by the parts holding together prior to brazing, and the bead acting as reinforcement, permitting smoother securing of the metals by these means.

#### Elbow Fabrication

In Fig. 5 we see another, quite common, use of the turning-beading machine, in the joining of elbow parts by seams prepared in the turning discs in part, and in the beading discs in part. Letters (A) and (B) indicate one end of an elbow and a middle part of the elbow, respectively. The out-turn of (B) fits into the bead in (A), prior to the bead's closing, as of (F) in the lower part of the Fig. — (G) shows the closed bead (E) over the upturn (C), while (D) shows the bead as it appears after its closing. The elbow parts (sheared to pattern) are riveted upon their processing through the rollers. Usually the corners of the overlaps have been clipped off, to ease the work of the turning and beading discs. If not clipped off, the overlap presents two thicknesses of the metal, which interfere with the forming of the one thickness of metal elsewhere, and the tight pressing of the discs into the overlap might cut the metal; but at any rate the pressure will tend to get the roundness of the part marred. With the corners cut off, only a small portion of the metal overlaps, which is easily overcome by the discs. The out-turns at (H) or (C) should not exceed  $\frac{3}{16}$  of an inch; particularly not in lighter gauges of metals and smaller diameters of the elbows. In larger diameters and heavier gauges the upturns (H) can be  $\frac{1}{4}$  inch, provided the bead (D) is deep enough to receive that much of the metal. Usually the bead will take in not more than  $\frac{3}{16}$  of an inch.

Usually in this making of the elbow (which is not to be the "adjustable" variety), the operator manages to close the bead in that portion of the part, shown at (D); while the opposite portion (the wider), as at (E), remains open for insertion of (H) as indicated at (F). By sliding the upturn (H) into the closed (D), only about one half of the entire (E) needs to be closed after the part's insertion, and this closing is commonly effected by tapping the bead at (F) over the (H) by a light hammer, completing the closing in the turning machine, with the discs not obstructed by the angling away part (H) as shown at (G). — By closing the bead lightly (not pressing down the metal), the elbow parts will hold together as they do in an adjustable elbow. But if we want to make the elbow adjustable, we usually provide the inverted bead (F) in Fig. 1, instead of the upturn (H), so as to prevent the edge of the metal, sharp as it is, from rubbing against the metal, if joined as shown at (G).

#### Knowledge of Machine Valuable

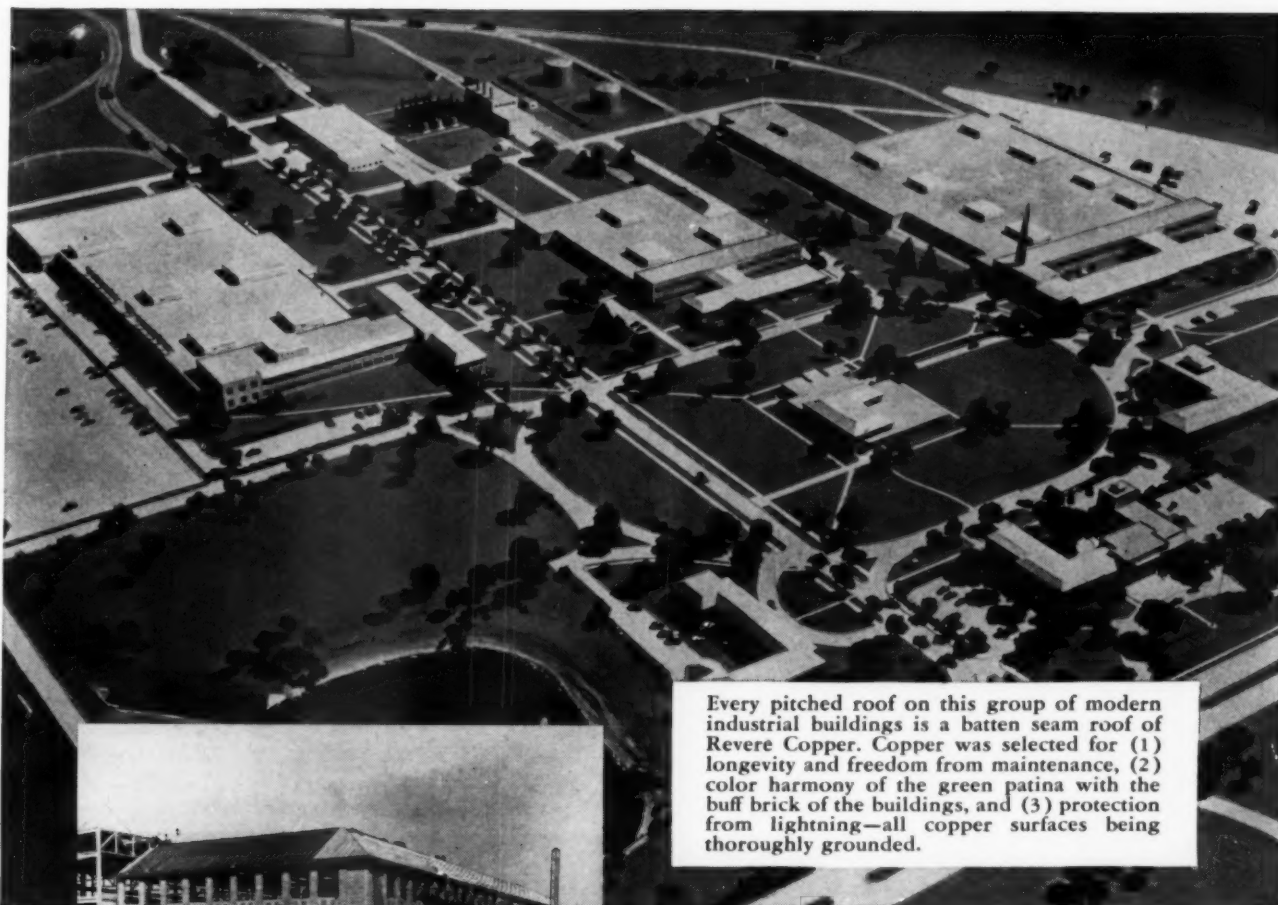
The average sheet metal shop obtains its requirements in elbows and the more standard parts from outside sources, the specialists in this production being better equipped for the work and accomplishing it by mass-production, which reduces the costs of fabrication. But there is scarcely a shop which does not need, at times, a special size and shape elbow or another

(Please turn to page 214)



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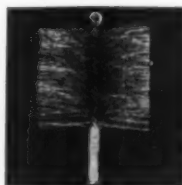
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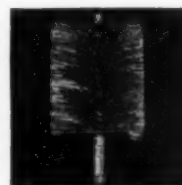
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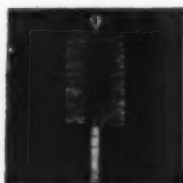
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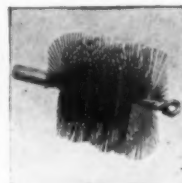
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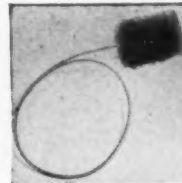
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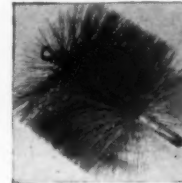
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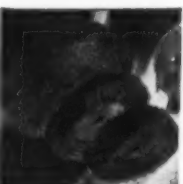
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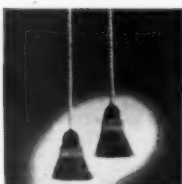
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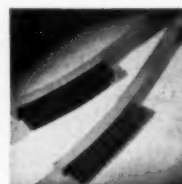
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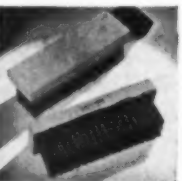
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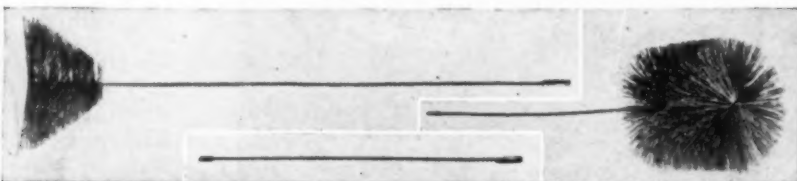
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Back Wire Brushes  
No. 800-11—Oil tempered  
steel wire. Hardwood  
block, 7½" x 2¼". Wire  
trim, 1½", 6 x 19 rows.



**SCHAEFER**  
Vacuum Cleaner Brushes  
No. 1005—Bassine Fibre Brush, 10½" dia. tapered  
to 3" dia. x 6 ft. long—48" handle with  
threaded nipple at end.  
No. 1000—Bassine Fibre Brush, 10½" dia. brush x  
10" long. Handle 39" with threaded nip-  
ple at end.

### Wire Flue Brush and Extension Handles

- 4 ft. Handles with Nipple and Coupling.
- 5 ft. Handles with Nipple and Coupling.
- 6 ft. Handles with Nipple and Coupling.

Write for SCHAEFER Catalog of flue and furnace brushes, or for information on any special brushes for specific requirements.

## SCHAEFER BRUSH MFG. CO.

1025 South Second Street Milwaukee 4, Wisconsin

# ASSOCIATION ACTIVITIES



## Ohio

**T**HE 31st annual convention of the Ohio Sheet Metal Contractor's Association will be held in Cincinnati, March 22, 23, and 24.

The convention committee has aimed at a program both educational and entertaining to all Ohio State sheet metal men. An outline of the program follows:

### MONDAY, MARCH 22

#### Morning

10:00 a.m. Registration

#### Afternoon

2:30 p.m. Address Thomas B. Holden, Pres. F. W. Dodge Corp. Subject—Construction Prospects for 1948

3:30 p.m. Address John F. Cowen—Copper and Brass Research Institute

7:00 p.m. Special Surprise Supper and Entertainment Provided by the Salesmen's Auxiliary.

### Tuesday, March 23

9:45 a.m. Opening of Convention

Phil C. Young, President, Ohio State Sheet Metal Contractors Association

Address Honorable Albert D. Cash  
Mayor of Cincinnati, Ohio

10:45 a.m. E. C. Carter, editor, *Snips* magazine

11:30 a.m. Address Robert M. Nelson  
Marketing and Service Department, American Rolling Mill Co., Middletown, Ohio  
Subject—Steel and Stainless Steel in This Age

Special Luncheon, South Hall, Netherland Plaza Hotel  
Special Guest Speaker

(For the Ladies: Tuesday Noon, luncheon at the Restaurant Continental, special prizes for all who attend.)

1:30 p.m. Address O. M. Mader, Engineer  
Development Division, Aluminum Company of America  
Subject—Aluminum for Industrial Roofing and Duct Work

2:30 p.m. Address John Norris, Vice Pres. and Gen. Mgr., Lennox Furnace Co., Marshalltown, Iowa  
Subject—Forced Air and Continuous Air Circulation

3:00 p.m. Address Sales Talk

3:45 p.m. Address Joe Wilder

4:00 p.m. Address National Officers

6:30 p.m. Annual Banquet and Dinner Dance  
Address Capt. Lawrence Hall  
Songs Mrs. Lee Gillespie

## Wednesday, March 24

#### Morning

10:00 a.m. Business Session

Report of Committee

Credentials

Resolutions

Nominations

Election of Officers

All men engaged in the sheet metal industry in the State of Ohio are invited to attend this convention.

## Illinois

**T**HE Sheet Metal Contractors Association of Illinois announces the following program for their 1948 convention, scheduled for April 12, 13 and 14:

Monday—April 12—10:00 a.m.

Registration

Monday—April 12—2:00 p.m.

Call to Order

Welcome Address:

Edward H. Olsen—President, Sheet Metal Products Co., Peoria, Illinois

President's Annual Report

Secretary's Annual Report

Appointment of Convention Committees

Report of Resolution Committee—R. H. Guenther

Awarding of Attendance Prizes

Monday—April 12—Evening

Display Floor open to Public

Tuesday—April 13—10:00 a.m.

Call to Order

Address and Discussion by Frank G. Bruninga—President, F. G. Bruninga Co., Public Accountants—"The Operation of A Business Individually, in Partnership and as A Corporation."

Address by Norman Knipe—Lennox Furnace Co., Marshalltown, Iowa—"Producing Comfort With Circulating Warm Air."

Awarding of Attendance Prizes

Tuesday—April 13—2:00 p.m.

Call to Order

Presenting the "National Hour"

J. D. Wilder or R. H. Guenther—Interlocutor

Frank Kramer—Milwaukee, Wisconsin—Apprentice Training

Ben Kolbenschlager—St. Louis, Missouri—Book-keeping

William Stevens—Aurora, Illinois—Warm Air Heating

Don Maresh—Cedar Rapids, Iowa—Labor Relations

Awarding of Attendance Prizes

(Please turn to page 134)





G. L. Tuve (left) director, Mechanical Engineering Department of Case Institute of Technology, Cleveland, new president of the American Society of Heating and Ventilating Engineers. With him is A. E. Stacey, Jr., vice-president of Carrier Corporation, Syracuse, N. Y., new first vice-president.

## 8TH HEATING AND VENTILATING EXPOSITION

**T**HE New York Exposition rendered timely aid to thousands of heating, air conditioning, and ventilating men who have become anxious about the fuel supplies during a severe winter by revealing an immense variety of up-to-date heating equipment in good and rapidly improving supply and also disclosing many ways to use fuel more efficiently. The exposition was held in Grand Central Palace, New York, under the auspices of the American Society of Heating and Ventilating Engineers, which held its 54th annual meeting during the same period, February 2-6, inclusive.

Improvement of design and introduction of new features by exhibitors brought a heavy attendance from trade, technical, industrial, management, and business sources and rolled up a total registration of 39,172 for the week. No tickets were sold to the general public.

A featured display was the heat pump, which in general implies the application of the refrigerating cycle selectively for both heating and cooling. When operating as a heating medium, this system gives out the heat of compression of the working fluid, and rejects the heat of expansion, when cooling it absorbs the heat of expansion and rejects the heat of compression. Because of this the general method is often termed reverse refrigeration.

The system seen at the exposition utilizes the even temperature prevailing below ground as a medium for counter-balancing the varying temperature requirements in both hot and cold weather.

### **Furnaces and Burners**

Ready convertibility from coal to oil firing—and back again, if need be—was emphasized by a number of exhibitors, and one manufacturer of warm air furnaces

has provided for conversion from gravity to forced circulation without baffling or jacket changes. Adaptability to changing fuel characteristics has been sought in several new design burners. In one an unusual control arrangement regulates the turbulence of the primary air, and in addition meters through a special tube a quantity of secondary air that washes over the nozzle. As a result of this design the burner is said to handle even the new "hotter" catalytic oils without smoking, obtaining an exceptionally high CO<sub>2</sub>. This burner is claimed to have an unusual range of 0.75 to 6 gallons per hour.

The scope of oil burner exhibits for conversion or replacement was extensive, ranging from heavy industrial units with variable viscosity control down to vaporizing burners for ranges, water heaters, space heaters and small furnaces. Another, which was made exclusively for the armed forces during the war, is now offered for the first time for civilian uses and is said to be the first oil burner to fire less than one gallon an hour without excessive service.

### **Gas Equipment**

The entire Lexington Avenue end of the main floor of the Palace was occupied by a unified exhibit sponsored by the American Gas Association and featured gas appliances produced by a number of different manufacturers and serving a great variety of domestic and industrial purposes. Scattered through the exposition were many other examples of gas-fired equipment also. Included among such apparatus was "the smallest full sized forced air furnace built," (40x13x16 inches), also "the only fan type gas unit heater to which return air ductwork can be connected."

### Air Conditioning

Air conditioning was featured by a substantial proportion of exhibitors showing boilers and furnaces, as well as by manufacturers specializing in that field. Those most interested in this field are specialists whose principal work is in the protection of industrial plants and the provision of comfort and health safeguards in stores, office buildings, hotels, restaurants, theaters and other public places. Such installations require air circulation, purification, humidification, heating and cooling. These were well represented at the Palace. The manufacturers of domestic equipment, on the other hand, have developed compact units which combine heating, cooling, filtration and humidification very effectively. There are also the winter air conditioners, which heat, filter, humidify and circulate air without providing refrigeration. In a number of instances such units are offered as conversions for gravity furnaces.

In a field embracing so many divergent factors as air conditioning includes, specialization is bound to develop, as it has in this instance, not only with respect to the heating, cooling and movement of air but also in moisture control and purification. Air clarification, by filtration, precipitation and washing, has been progressing steadily in the industrial field for a number of years. Recently, it has made new technical gains, as exemplified in a number of ways at the exposition.

Noteworthy is a combination of filtration and electrostatic precipitation which is a basically new development, as the two methods involved have been employed independently heretofore. This is achieved through the use of a specially manufactured paper mat which serves as a mechanical filter but at the same time carries an electro-static charge and therefore attracts electrified dust particles to its surface while others are being entrained in its interstices. When it has been loaded to the point where the air flow is seriously obstructed, the paper mat is readily removed and discarded.

Typical of many recent industrial reorganizations is a brand new exhibitor, successor to a concern that built kitchen ranges for a hundred years prior to World War II, which is now concentrating on a new line of electrostatic precipitators of the water-wash type, built in four sizes for domestic applications. This is a completely packaged unit, which removes grit, lint, insects, tobacco smoke, pollen and even certain germs.

### Instruments for Every Need

Other exhibits included CO<sub>2</sub> indicators, draft gauges, combustion testing sets, manometers and pitot tubes, also indicating and recording thermometers, gas analyzers and electrical appliance testers. Of widespread interest to visitors was a recorder designed specifically for portable use by installers and service engineers of heating, air conditioning and refrigeration appliances. This instrument incorporates unique features for service applications and is priced within the reach of small dealers and service organizations.

Still another innovation is a portable three-way testing instrument which measures air velocity, temperature and static pressure through a single probe, requiring only a few simple adjustments. This unit was developed and used for a number of years by the research engineer of a well-known manufacturer of air diffusers. It was then discovered that a market awaited such an instrument, and the first production models were on view at the Palace.

Well represented were such devices as room coolers, window coolers, attic and kitchen fans. A clothes drier that is made a part of a forced air heating unit is arranged to dry the clothes with filtered air—winter or summer.

### ASHVE Sessions

Many interesting papers were presented by members of the American Society of Heating and Ventilat-

*(Continued on page 224)*

Roy Hunsaker, Owens-Corning Fiberglas Corporation (right), shows how Fiberglas duct insulation is employed to insulate air ducts in the new Fiberglas Building at 16 East 56th Street, New York City. Reading from left to right are F. W. Smith, Carrier Corporation, Syracuse, New York; M. J. Kohnstamm and Gene Brown, Morrison Steel Products, Buffalo, New York; and L. S. Redford, Jackson and Church Company, Saginaw, Michigan. The duct insulation has been left uncovered to permit inspection.



# The Indiana Convention

THE Severin Hotel in Indianapolis on Feb. 5th & 6th was the scene of the 30th annual convention of the Sheet Metal and Warm Air Heating Contractors Association of Indiana. As a result of the recent membership drive put on by the Association the attendance at the convention was 300, a good representation for a state association. The first day of the convention was occupied with the details of registration, committee meetings, and election of new officers for 1948.

## The Banquet

The Association put its best foot forward with the banquet that was presented on the evening of Feb. 5th. Once the mundane procedure of eating was out of the way the fun began. The entertainers scheduled for appearance decided they needed some practice so "Skeet" Thompson, Indianapolis, kept things rolling with some of the funniest stories encountered in quite a spell. Skeet's delivery was so professional that some thought it a mistake to call the performers in at all, just keep Skeet going!

Next came the act that popped a number of vest buttons when a selected group of association stalwarts offered a dramatized version of one of the current crop of highly-sexed, historical novels. There was little question but that Al Nemec of Indianapolis was the hit of the evening as the glamorous heroine of the novel. Skeet got into the act again as the hero and his lovemaking was certainly direct and threw all subterfuge to the winds. The hilarity wound up with a film presentation by the Fur-Mets.

## Business Sessions

Friday morning, Feb. 6th, registration continued and then the convention was called to order by President Meggs who presented the first speaker.

Ed Carter, editor of *Snips*, gave a talk on the credit problems that are experienced by the heating and sheet metal contractor. He brought out some of the business problems to which a contractor should pay particular attention.

L. B. Schiesz, Indiana Gas Association, the next speaker was particularly well informed and aware of the latest developments in the gas supply picture. In regard to the overall picture he stated that there are 6000 miles of 24" diameter pipe on order and that this summer may see the installation of 1500 miles of that pipe. The situation in Indiana seemed to be acute since 90 million cubic feet a day enters Indiana and even after strict curtailment of demand there is still a market for 120 million feet a day.

According to Mr. Schiesz first priority is given to the heating of homes and since there is a direct ratio between the outside temperature and the amount of gas used the requirements for home-heating vary considerably. To attempt to offset this variation two classes of industrial customers have been set up. One customer is the "firm demand" type that they attempt to supply as regularly as possible and the other is the "interruptable" type that will be supplied if there is any chance of doing so. As to the future supply of gas fuel the speaker did not want to be pessimistic and still did not want to convey the impression that the situation was hopeless, so he made no definite predictions.







### **"Legal Entanglements"**

John D. Hughes, a prominent Indianapolis attorney was next on the program and his message was aimed at saving the dealer unnecessary difficulties with the law. He spoke of the liabilities and tax advantages of the various forms of doing business, partnership, corporation, etc., urged use of an installation contract that provides full protection to the installer and told the dealers to be certain of adequate protection in regard to workmen's compensation and public liability.

Mr. Hughes advocated the filing of a lien on jobs installed, if there was any possibility that it would be difficult to get payment for the work. If the lien is filed within sixty days after completion of the job the contractor can be reasonably sure of getting his money, but if he lets the sixty day period go by without filing and then has trouble collecting he may be completely out of luck.

### **Aluminum**

Paul E. Brandt, Reynolds Metals Co., was caught in a time squeeze but he did manage to give a brief history of the discovery and subsequent increase in use of aluminum and its alloys. He discussed the types of aluminum sheet that are useful to the heating and sheet metal contractor, 2S, 3S and Utility Sheet. The matter of galvanic corrosion was touched upon, corrosion where aluminum is joined with a dissimilar metal. Zinc chromate primer was advocated but he said that such a user as Ford was making aluminum running boards and using no primer and having no trouble. An indication of the growth in use in the heating and ventilating field is the fact that very little was used in 1946 and yet 1 million pounds was used by the industry in 1947.

### **Moisture Problems**

Prof. William Miller of Purdue University spoke on the subject of moisture problems in heating. In his friendly, non-technical style he talked of the early attempts at beating the difficulty of condensation and moisture and told what a great help the wind tunnel and moving pictures taken of model houses had been in this study. The matter of making air intakes work was interesting as he brought out the effect of pressure gradients of the wind blowing around the house on the fresh air intake. The underlying theme of his speech seemed to be the unpredictable nature of condensation.

A "Question Box" with the convention speakers answering queries of the delegates was last on the docket and after the door prizes were awarded the convention adjourned.

### **Officers**

H. W. Meggs.....	President, New Castle
W. E. Graber, Jr.....	1st Vice President, South Bend
L. D. O'Donnell.....	2nd Vice President, Vincennes
Frank Anderson.....	Secretary, Terre Haute
Homer Selch.....	Treasurer, Indianapolis

### **Directors**

Preston Ake.....	Fort Wayne
Lex Balfour.....	Anderson
Carl G. Butz.....	Lafayette
E. L. (Bud) Carr.....	Indianapolis
John Novotny.....	Gary
A. Schnakenburg .....	Evansville
C. O. Stauffer.....	South Bend
James R. Walker.....	South Bend
O. N. Frank.....	South Bend

# Wisconsin's 33rd Convention

Monday morning, Feb. 9, registration opened in the Schroeder Hotel for the 33rd annual convention of the Sheet Metal Contractors' Association of Wisconsin. By the time the program had been completed and the banquet was served nearly five hundred delegates had registered. This was certainly a remarkable figure for the gathering of a state association.

Monday morning was occupied with registration, visiting the exhibits in the hall and meeting friends in the Hospitality Room. After a number of announcements, the "National Hour" took place in the afternoon with J. D. Wilder, executive secretary of the Sheet Metal Contractors' National Association and other prominent association figures bringing the assembled Wisconsin members up to date on the activities of their association. After the session was concluded the Hospitality Room dispensed its good cheer, thru the courtesy of the sponsors, manufacturers and their representatives, jobbers and wholesalers.

Tuesday morning found a group from the convention making a tour thru the water filtration plant on Lake Michigan. At the afternoon closed session the reports of the officers and committees were heard, the new slate of officers was elected and installed and the meeting then adjourned until the following morning. Again, the Hospitality Room was open and a card party enlivened activities in the evening.

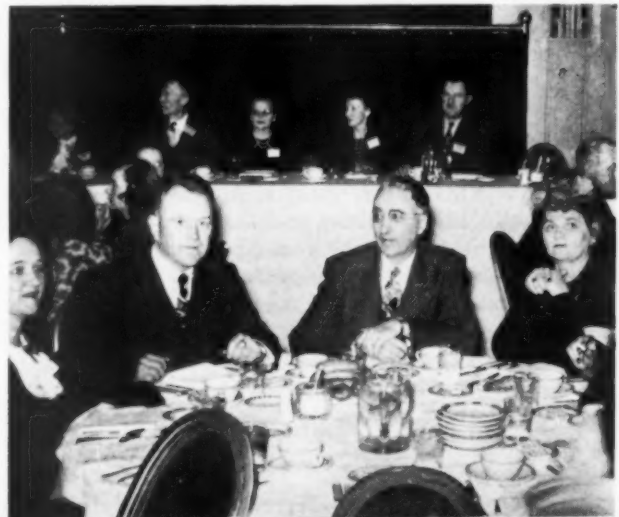
The business session was continued on Wednesday morning and then the afternoon schedule was devoted to an open forum on the heating and air conditioning industry and its problems. Walter Marth, Milwaukee, was the able chairman of the afternoon meeting and opened the session with a short discussion of the need for increased customer consideration in the industry.

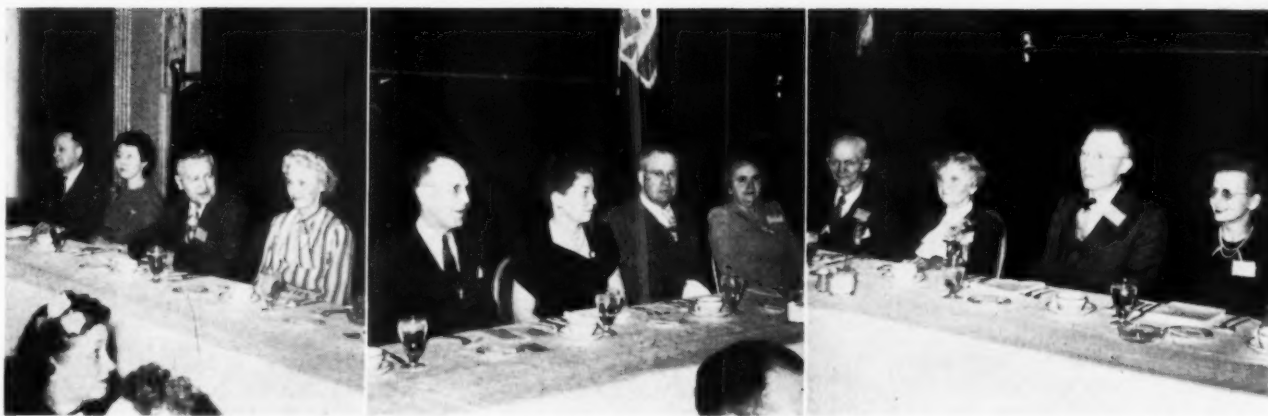
## 1948 Officers

G. F. Wolff.....	President, Madison
Henry Ortwig.....	1st Vice President, Racine
Bernard Zahn.....	2nd Vice President, La Crosse
Frank Kramer.....	Treasurer, Milwaukee
Paul L. Biersach.....	Executive Secretary, Milwaukee
Harry Eschenburg.....	Secretary, Milwaukee

## Directors

A. C. Mantel.....	Milwaukee
Harry Seeley.....	Oconomowoc
T. P. Brenner.....	Fond du Lac
Wm. Gehrke.....	Sheboygan
Paul Krueger.....	Madison
Nels Madsen.....	Oconomowoc





He pointed out the fact that it has been a little too easy to get business in the last few years than is good for the "selling muscles" of the dealer and that the time to prepare for increased sales resistance is now.

Mr. Marth then gave an explanation of Continuous Air Circulation that was thorough and lucid and yet couched in terms that could be understood by one not possessing an engineering degree. Mr. Frank Mehrings, immediate past president of the National Warm Air Heating and Air Conditioning Association was in the audience and added a few words of his own in support of the CAC program and described some of the promotional literature available.

The general discussion then went on to subjects such as heating ranch-type homes; value of insulation;

insurance coverage to protect the contractor in case of mishap after the job is installed and faulty blower belts. The welding of leaking oil tanks was also taken up with some humorous sidelights on various techniques for solving the problem.

Considerable time was devoted to a discussion of panel heating and Martin Schaar, Milwaukee, gave some results that have been compiled on several warm air panel jobs he has installed.

Promptly at seven o'clock, the banquet began uniting the delegates and their wives after the wives had completed an eventful program of activities that kept them occupied while the convention was in session. A diverting program of entertainment followed the banquet.

## Apprentice Training Urged

DOUGLAS WHITLOCK, CHAIRMAN of the Building Products Institute, urged the Joint Congressional Committee on Housing to recommend an additional appropriation of \$2,500,000 for the Apprentice Training Service of the U. S. Department of Labor, in order to help avert a possible shortage of skilled building trades workers this year.

In a letter to Chairman Gamble of the Joint Committee, Mr. Whitlock said:

"It would be a catastrophe if a shortage of skilled on-site workers were to hold down the building of housing or other needed construction this year, at a time when materials production is increasing steadily and other industry problems are being resolved.

"Official estimates indicate that an additional 150,000 to 200,000 building trades workers will be required to meet the \$14 to \$15 billion of new construction estimated for this year by various private and governmental sources.

"The Apprentice Training Service has done outstanding work since the end of the war in stimulating the training of new workers, but its staff is entirely too limited to handle the increased volume of work required to meet 1948 requirements. We urge that the Joint Committee in its forthcoming report to Congress recommend an appropriation of at least \$4,944,000 for apprentice training in the coming fiscal year. This year the appropriation is \$2,444,000.

"The building industry is unanimous in its endorsement of the effective work which the ATS has done.

Inasmuch as the training program requires cooperative effort by industry and by labor, it is entirely fitting that the Federal government play an active part in coordinating the work of the two groups."

## NAFM Officers

AT THE THIRTY-FIRST ANNUAL MEETING of the National Association of Fan Manufacturers held at Buffalo, New York, February 19, 1948, the following officers were elected for the ensuing year:

R. A. Wasson.....President  
T. J. Flanagan.....Vice-President  
L. O. Monroe.....Secretary-Treasurer

Mr. Wasson is Vice-President and General Manager of Clarage Fan Company, Kalamazoo, Michigan and Mr. Flanagan is President of Garden City Fan Company, Chicago, Illinois.

## 1947 Stoker Sales

STOKER SALES IN 1947 TOTALED 68,908 units of all sizes and types compared with a total of 190,918 units in 1946 and 130,824 in 1945 according to a release from the Department of Commerce.

Previously the Stoker Manufacturers Association had estimated 1947 total unit sales at factories at 68,500. The association also estimated sales by dealers totaled approximately 110,000 to 120,000 units last year because distributors and dealers had heavy inventories at the beginning of 1947, most of which were sold and installed during the year.



# Association Activities . . .

(From page 127)

Tuesday—April 13—6:30 p.m.

## Stag Party

Wednesday—April 14—10:00 a.m.

Address by Fred C. Nolting, Elgin, Illinois—"Why I Belong to the Sheet Metal Contractor's Association of Illinois."

Address and Discussion directed by W. H. Creber—Chicago Steel Service Co., Chicago, Illinois—"The Uses of Stainless Steel in Sheet Metal Work."

Technicolor Sound Picture "Pigs in Progress," courtesy of Reynolds Metals Company.

Remarks by George Voris—District Manager of Reynolds Metals Company.

Awarding of Attendance Prizes

Wednesday—April 14—2:00 p.m.

Address by Jack Stowell, Aurora, Illinois—"Pricing and Selling Your Merchandise and Services For A Profit!"

Committee Reports

Unfinished Business

Report of Resolution Committee

New Business

Election of New Officers

Introduction of New Officers

Awarding of Attendance Prizes

Wednesday—April 14—6:30 p.m.

Banquet

Entertainment

Special Prizes for Ladies

An interesting program of activities for the ladies has been arranged with registration on Monday morning, the Peoria Home Show and Convention Display in the afternoon.

On Tuesday, the morning will be open, there will be entertainment at the noon luncheon, and a theater party in the evening.

On Wednesday morning there will be a bus trip, a luncheon, and a tour through the Peoria Agricultural Laboratory in the afternoon. At 6:30 they are invited to attend the convention banquet with entertainment and special prizes for the ladies.—*W. Rex Shaw, Secretary.*

## Carolinas

**M**EMBERS of the Carolinas Roofing and Sheet Metal Contractors' Association were reminded in the February bulletin to keep the following records:

Federal Income and Federal Tax Reports must be kept for four full years. Union Labor Agreements must be held for four years from last effective date. Payroll Records must be kept for four years after last entry date. Employee Earning Records must be kept two years after last entry. Work Time Schedules must be kept two years after last effective date. Order, Shipping, Billing Records must be kept two years after last entry.

*J. A. Piper, Editor*

## Florida

**T**HE tentative program for the annual convention of the Roofing and Sheet Metal Contractors' Association of Florida, to be held at the George Washington Hotel, Jacksonville, on April 9 and 10 follows:

### FRIDAY, APRIL 9th

10:00 a.m. Registration

10:45 a.m. Welcoming Address by the Mayor of Jacksonville

11:00 a.m. Election of Officers  
Business Discussion

12:00 Noon Recess

2:00 p.m. General Business

2:30 p.m. Address by E. C. Carter  
(editor, *Snips* magazine)

3:15 p.m. Address by representative American Rolling Mill Co. (subject New Uses of Stainless Steel)

7:30 p.m. "Pigs in Progress" Motion Picture by Reynolds Metal Co.

### SATURDAY, APRIL 10th

9:30 a.m. General Business and Open Forum

10:30 a.m. Discussions by Manufacturers and Distributors Representatives

12:00 Noon Recess

2:00 p.m. Tour of Local Shops by Chartered Buses

7:00 p.m. Banquet

8:00 p.m. Entertainment

9:00 p.m. Orchestra for Dancing

Note: There will also be a program for ladies entertainment.

New shop owners are particularly invited to attend.

Shop owners are asked to mail their payroll tax estimates to the secretary. A very important matter pertaining to this tax will be brought up at the convention and the amount of the tax will help show the importance of the issue.—*George Ferber, 4101 Evergreen Ave., Jacksonville 6, Fla.*

## Detroit

**O**VER one hundred members and guests of the Detroit Association of Warm Air Heating & Air Conditioning Contractor's, Incorporated were present at a dinner which preceded the regular monthly meeting on February 12th, at the Fort Shelby Hotel.

After the dinner state members from Muskegon, Saginaw Valley, and Flint were introduced by President Marshall VanAssche. Also present was John C. Reahard, head of the Detroit Safety Engineering Department, who is now working with a committee from this and other associations on a new oil burner installation code.

Ray Kretch, with a small group of talented members, led the assembly in community singing.

A moving picture showed the glories of Isle Royale, located in Northern Michigan.

The meeting was then adjourned and liquid refreshments were furnished by the S. J. Johnson Company.—*W. O. Smith.*

## New York State

THE three-day program for the New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc., as planned for their Silver Anniversary—April 5, 6 and 7—follows:

### SILVER ANNIVERSARY 1923 to 1948

#### MONDAY, APRIL 5

- 9:30 a.m. Registration and Inspection of Displays  
10:30 a.m. Call to Order—Blue Room—Mezzanine Floor  
"President's Message"  
Joseph R. Stiglmeier, State President  
(Credential Committee  
(Auditing Committee  
(Nominating Committee  
(Resolution Committee  
Appointment of  
11:30 a.m. "The Merchandisers' Association"  
Alexander M. Mitchell, President  
12:00 Noon Recess  
12:30 p.m. Luncheon with Ladies, Architects and Engineers, Palm Lounge—Ground Floor  
Address of Welcome, Samuel B. Dicker, Mayor City of Rochester  
"Cooling with Gas"  
Speaker—D. K. Smith, Rochester Gas and Electric Company  
2:00 p.m. "Reverse Cycle Heating"  
William Turnbull, New York State Electric & Gas Corp.  
3:00 p.m. "The National Hour"  
National President, Richard E. Walsh, "Trade Relations"; A. J. Walton, "Labor Relations"; Clarence J. Meyer, "Warm Air Heating"; George Ballard, "Bookkeeping"; Frank Townsend, "Apprentice Training"  
Inspection of Displays  
5:30 p.m. Recess  
6:30 p.m. Open House at the Liederkrantz Club  
"Courtesy of the Merchandisers"

#### TUESDAY, APRIL 6

- 9:00 a.m. Inspection of Displays  
9:30 a.m. Call to Order—Blue Room—Mezzanine Floor  
Announcements, Joseph R. Stiglmeier, State President  
"Practical Hints About Sheet Copper"  
H. E. Voegeli, American Brass Company  
10:30 a.m. "Panel Heating"  
Joseph D. Wilder, Executive Secretary, Sheet Metal Contractors' National Assn., Inc.  
12:00 Noon Recess  
12:30 p.m. Luncheon—Palm Lounge  
Motion Pictures to Follow  
2:00 p.m. Inspection of Displays  
3:00 p.m. "Group Compensation No. 194 Activities for the Past Year"—Laverack & Haines, Inc., Managers  
8:00 p.m. "A Night at Monte Carlo"—Blue Room

#### WEDNESDAY, APRIL 7

- 9:00 a.m. Inspection of Displays  
10:00 a.m. Call to Order—Blue Room—President Joseph R. Stiglmeier; Annual Business Meeting for State Members Only; Secretary's Report; Treasurer's Report; Report of Nominating Committee; Installation of New Officers; Report of Auditing Committee; Report of Resolution Committee; Unfinished Business; New Business; Adjournment  
Call to Order—Yellow Room—President Alexander Mitchell; "The Merchandisers"; Annual Business Meeting for Members Only; Secretary's Report; Treasurer's Report; Report of Nominating Committee; Installation of New Officers; Report of Auditing Committee; Report of Resolution Committee; Unfinished Business; New Business; Adjournment  
12:00 Noon Recess  
12:30 p.m. Luncheon with Ladies—Palm Lounge

## COMING EVENTS

- Mar. 22-24—Ohio Sheet Metal Contractors' Association. Annual. Netherland Plaza, Cincinnati. W. E. Bogen, Secy., 334 E. Livingston Ave., Columbus 15, Ohio.  
Apr. 5-7—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association. 25th Anniversary. Rochester. Clarence J. Meyer, State Secretary, 567 Genesee Street, Buffalo 4, N. Y.  
Apr. 5-8—Oil-Heat Institute of America. Silver Anniversary Convention and Products Exposition. The Coliseum, Chicago. A. E. Hess, Man. Dir., 6 E. 39th St., New York 16.  
Apr. 9-10—Roofing & Sheet Metal Contractors' Association of Florida. Annual. George Washington Hotel, Jacksonville. John C. Caldwell, Secy.-Treas.  
Apr. 12-14—Illinois Sheet Metal Contractors' Association. Annual with Exhibits. Jefferson Hotel, Peoria. W. R. Shaw, Secy., 695 E. State St., Jacksonville.  
Mar. 22-25—National Warm Air Heating & Air Conditioning Assn. Seventh Annual Forced Warm Air Conference. Michigan State College; East Lansing, Michigan. Prof. Lorin G. Miller.  
May 3-5—Sheet Metal Contractors' National Association, Inc., 1948 Annual. Hotel Cleveland, Cleveland, Ohio. J. D. Wilder, Executive Secy., 170 Division St., Elgin, Ill.  
June 7-10—Oil Heat Institute of New England. New England's Biennial Exposition of Oil Heat. Hotel Statler, Boston. Fred N. Beckwith, Executive Secretary, 839 Beacon St., Boston.

## INDOOR COMFORT CONFERENCES

- Akron—Mar. 17, 18, 19—A. Bormet c/o Builders Exchange, 640 N. Main St., Akron, Ohio.  
Pittsburgh—Mar. 22, 23, 24—Louis F. Demmler, Demmler Brothers Co., 100 Ross St., Pittsburgh 19, Pa.  
Indianapolis—Mar. 29, 30, 31—Homer Selch, 944 Hosbrook St., Indianapolis, Ind.  
Chicago—Apr. 7, 8, 9—George Kalvog, 1421 N. Keeler Ave., Chicago 51.

## CANADA

- Kingston, Ontario (Alternate Ottawa)—Mar. 30, 31, Apr. 1 and 2.  
Quebec City, P. Q.—Apr. 12, 13, 14 and 15.  
Amherst, N. S.—Apr. 26, 27, 28 and 29.

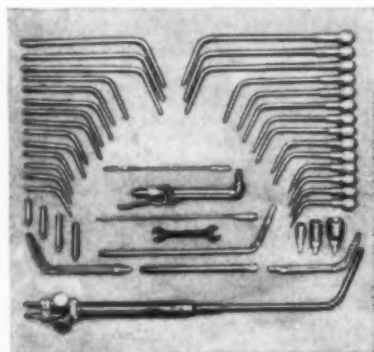
- 2:00 p.m. Inspection tour of Eastman Kodak Co.—Kodak Park Plant  
6:30 p.m. Banquet—Ballroom  
Introduction of New Officers of the State and Merchandisers' Association by Chairman Richard Friday  
Speaker—Roy Duffus  
Music and Entertainment by Max Raney  
Clarence J. Meyer, State Secretary

# EQUIPMENT DEVELOPMENTS

## Airco Torch ..... 59

The Airco 800 welding torch has a conventional weight of 1½ pounds, and is only 11½ inches long. It has a capacity for operating single flame welding tips from Nos. 0-13 inclusive, as well as multiflame tips up to No. 15.

The Airco 800 is suitable for welding from the thinnest sheet metal up to 1½ inches in thickness.



Advantages include better flame control, low maintenance costs, and modern design.

Cutting attachments that use Airco's present line of cutting tips are available for these new torches.

For a free demonstration in your shop, write—Department 1046, Air Reduction Sales Company, 60 E. 42nd St., New York 17.

## Circulataire ..... 60

The Circulataire is a forced air unit for warm air furnaces, designed to remedy the problem of hard-to-heat rooms. The fan, situated in the bonnet of the furnace, is set in motion when the temperature reaches that to which the control is set and stops when the temperature in the bonnet drops below this setting. The warm air is forced through all the ducts and individual room temperatures can be regulated by adjusting the duct dampers or room registers.

All parts of the fan in the bonnet can be inserted and assembled through one of the duct openings in the bonnet. Three castings, secured by sheet metal screws on the edge of the bonnet, support by three sections of pipe the central casting which houses the bearing. Apart from the hole in the top of the

Use the Coupon on this page

bonnet for the center shaft there is one other to be made for inserting the control. No new duct work is necessary and no change of the

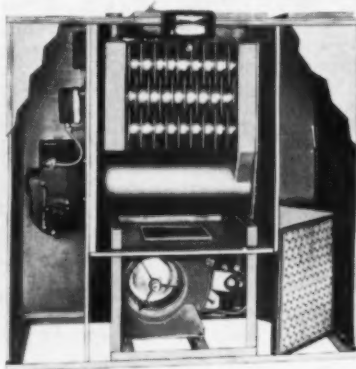


old. The motor is secured to a bracket which is adjustable on one of the sections of pipe. *Circulataire Div. of Corlett-Turner Co., 1001 S. Kostner, Chicago 24.*

## Silent Korth ..... 61

The Silent Korth winter air conditioning unit has a total of 81 fins bonded on 9 heater tubes. Tubes are large, 3-in. cylinders.

An Inspect-O-Panel at the back



of the heat exchanger assembly exposes the entire internal heating assembly—combustion chamber, baffle, and all 9 finned tubes. The panel is flanged and gasketed.

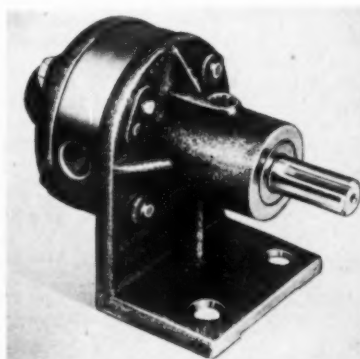
The blower is under the combustion chamber—air flow is parallel with the flow of heated air.

The gases from the burner flame are spread by a baffle.

Four models are available with capacities ranging from 56,975 to 116,875 Btu at the register.—*Eckhart Manufacturing Company, 470 W. First Ave., Roselle, N. J.*

## Rotary Pump ..... 62

A new series G-175 Rotary pump will handle lubricating oil, hydraulic oils, kerosene, fuel oil, coolants, etc., with capacities from ½ to 4 gpm at 125 psi working pressure.



Available in foot, flange, and sump mounts. Quiet operation at standard electric motor speeds eliminates the need for belts and pulleys.—*Eclipse Corporation, Pump Div., 24 S. Clinton St., Chicago 6.*

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We will ask the manufacturers to send full particulars about the products and literature mentioned.

Be sure to circle the items you want.

Equipment Developments

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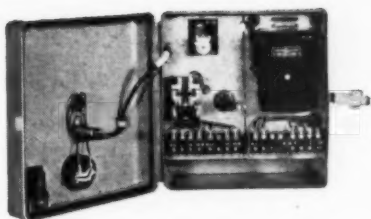
Name .....

Company .....

Address .....

Address: AMERICAN ARTISAN, 6 North Michigan Ave.  
Chicago 2, Illinois





## Control System ..... 63

A new photoelectric combustion control system for commercial oil burners has been announced. It is composed of a master control unit, a photo-tube unit, and an electrode unit. The new system is designed to shut off the flow of fuel to an oil burner immediately if the oil fails to ignite or if the flame is extinguished after successfully igniting. On gas-electric ignition systems it prevents fuel from flowing if the gas pilot does not ignite.

The system allows the burner motor to operate for a definite period after shut-down or combustion failure in order to purge the nozzle or cup of unburned fuel, thus preventing carbonization and reducing servicing. The system is locked against further operation after a failure to start until manually reset. A light on the cabinet cover indicates when the equipment has gone to lock-out.

Additional information is given in GEA 4779.—Control Division, General Electric Company, 1 River Rd., Schenectady 5, N. Y.

## Squirrel Cage Motor ..... 64

A single-phase Life-Line capacitor-start, induction-run, squirrel cage motor is available in ratings of  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ , 2, 3, 5 and  $7\frac{1}{2}$  hp (Frames 203 through 324). This motor is of all-steel construction—steel frame, feet and end brackets.

This Type CAP motor utilizes the capacitor for starting only. The starting switch or relay disconnects the capacitor as the motor approaches full speed: it then operates as induction run motor.

Air openings are in the lower half of the end brackets to give protection against dripping liquids. Self-sealed, prelubricated ball bearings provide effective lubrication for five years without repacking.

The motors are available for 60, 50 and 25 cycle, single-phase, 110/220 volts dual voltage (Frames

203-225), 110 or 220 volts single voltage (Frames 254 and above); 3450, 1750, 1160 rpm for 60 cycle, 2875, 1475, 970 for 50 cycles and 1450 rpm for 25 cycles; 40 deg. C rise

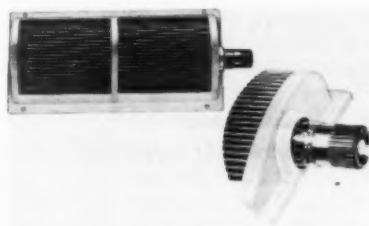


continuous duty on 60 and 25 cycle, 50 deg. C rise continuous duty on 50 cycle.—Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

## Room Control ..... 65

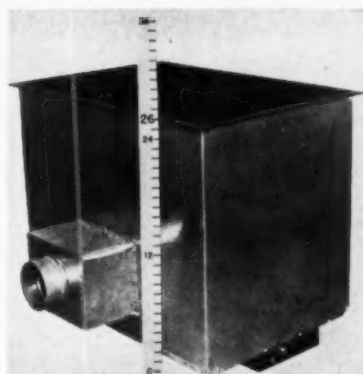
The Thermo-Matic register for controlling individual room temperatures in homes using forced warm air heating systems has recently been introduced. The prime purpose of the register is to regulate the warm air input from each register in direct relationship to the heat loss from each room.

Thermo-Matic registers are normally placed in the easy-to-heat rooms so that these rooms will not overheat before the balance of the residence reaches the desired tem-



perature. The thermo-dial on the right hand side of the register selects the desired room temperature and from there on, the thermostatic element takes over to maintain room temperatures at the predetermined setting.

The replacement of one or more standard registers with Dole Thermo-Matic registers will correct many unsatisfactory heating installations.—Dole Valve Co., 1933 Carroll Ave., Chicago 12.



## The Shorty-Fifty ..... 66

The Shorty-Fifty floor furnace is only 26 in. deep, no pan being required for a standard installation. Floor openings are reduced to  $20\frac{1}{2}$  x  $30\frac{1}{2}$  inches for the unit with full 50,000 Btu heat capacity.

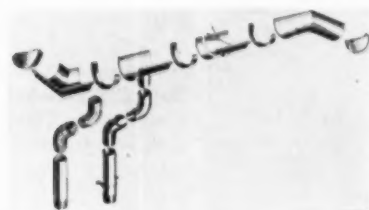
The design permits easy installation and inspection. The burner features one gas port, stoppage is minimized and the burner operates at 75 per cent efficiency, with no rattle.

The Shorty-Fifty is available to operate on natural, manufactured or liquified petroleum gas—AGA approved. It can be equipped with automatic controls.—John Zink Company, 4401 S. Peoria St., Tulsa 1, Okla.

## Rain Equipment ..... 67

Aluminum eaves trough, conductor pipe, and fittings are being produced. Lifetime aluminum rain-carrying equipment follows standard design features. The eaves trough is available in two styles—round and square. The conductor pipe comes in three forms—round, and square.

The traditional slip-joint method



of installing is used. Customary rules apply and soldering is unnecessary. Installation procedures are available.—Reynolds Metals Company, 19 E. 47th St., New York 17, N. Y.

## EQUIPMENT DEVELOPMENTS

Use the coupon on Page 136

### Type AA Fan ..... 68

Type AA fan has been designed to equalize temperature and humidity, for drying and cooling.

The totally enclosed motor is equipped with ball bearings and can be operated in any position.



Blades are all steel, die stamped and die formed. It is equipped with safety guards, front and back, and an extension cord and plug make it a convenient portable fan.

The AA 20-in. fan delivers 3,000 cfm; the 24-in., 4,800 cfm.—*Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.*

### Packaged Container ..... 69

A 5-ton capacity packaged air conditioner for stores, restaurants, etc., occupies seven and one-half



square feet of floor space. The refrigerating unit, electric motors, cooling coils and fans are housed in a single steel cabinet. For winter operation, a heating coil can be added. All electrical, water and drain connections are grouped close to the floor, affording easy as-

sembly.

The conditioner can be used from

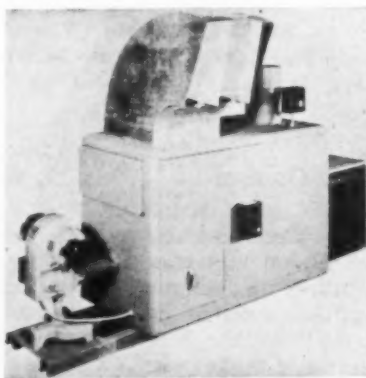
a remote position by employing a simple duct system.

These conditioners may be used in multiple for an entire building, a series of floors and is suitable for buildings constructed without provision for air conditioning.—*Frigidaire Division, General Motors Corp., Dayton 1, Ohio.*

### Sermat Furnace ..... 70

A compactly designed oil furnace for commercial buildings has been designed for use in heating garages, warehouse and for buildings under construction where it speeds drying of plaster.

Equipped with steel skids, it can be moved from building to building



or mounted in a low truck or trailer.

It has an underwriters' Laboratories approved jet-type gun burner, the nozzle of which delivers 120,000 Btu's per hour at the bonnet. It has a free air delivery of 2,800 cfm. Burns No. 3 Grade Oil or lighter.

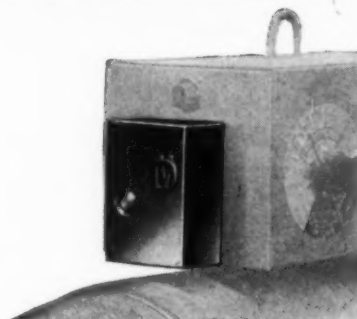
There is a Minneapolis-Honeywell combination fan and limit control and an automatic stack control, automatic humidifier, large capacity filtered air intake. Finished in gray wrinkle enamel.

Design permits using as a space heater with the plenum mounted on the top of the furnace, or, it can be connected to duct work.—*Service Metal Fabricators, Inc., 2350 W. 58th St., Chicago 36.*

### Welder Control ..... 71

Designed for installation on any standard type d.c. motor-generator welder, the "D-V" control automatically starts the welder when the operator contacts the work piece with the electrode. The control also automatically shuts off the welder a few moments after weld-

ing has stopped. An arc-time totalizer is optional equipment.



The arc-time totalizer provides accurate information on actual welding time and affords valuable data for work distribution, cost analysis and production control.—*D-V Welding Controls, 3959 Piedmont Ave., Oakland 1, Calif.*

### Small Welder ..... 72

A new series of press-type welders has been announced. Utilizing a standard frame size, these welders offer a choice of 5 power ratings (20, 30, 40, 50, and 75 KVA) and 4



throat depths (12, 18, 24 and 30 in.). Capacities on mild steel range from .016 up to .125 in.

If desired, the welders can be furnished with "Three-Phase," available for the first time on small machines. The "Three-Phase" control solves power supply problems, permits the welding of aluminum, brass, etc., with nominal power supply.—*Sciaky Bros., Inc., 4915 W. 67th St., Chicago 38.*



## Sign of Service in Steel

**T**HE right steel, *plus* the right kind of service, is bound to have a healthy effect on your profit column on sheet metal jobs. You can count on the capable Armco Distributor for both.

Right now he can give you immediate service on the grades and finishes of ARMCO Stainless Steels you need to produce top-quality industrial equipment, marquees, storefronts, kitchen equipment and other jobs. He is ready to give you complete information on fabricating ARMCO Stainless with regular shop equipment.

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up are the Armco mills, running full blast to produce more and more of these special-purpose sheets.

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Scrap piles in most steel mills are critically low. Unless this shortage is relieved, everybody must wait longer for steel. You can help. Check your unusable tools, machines and obsolete equipment. Collect all the steel scrap you can find and speed it through regular channels to the mills. Remember—*more scrap means more steel, sooner.*

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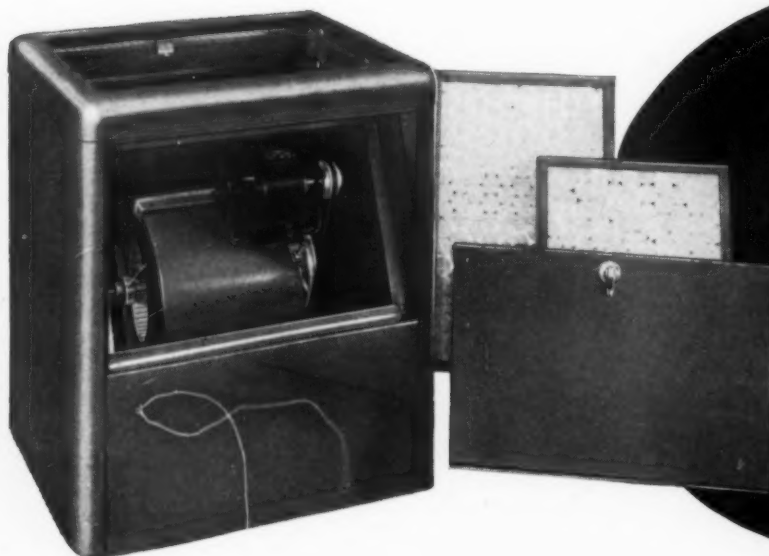
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THE **LAU**  
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UNIT

#### DISTINCTIVE LAU FEATURES

- Shipped assembled . . . will go through any door. (Models 404-A, 405-A and 406-A may be knocked down for installation purposes.)
- Large size access door . . . easy to service motor, belt or filters.
- The variable speed motor pulley is readily accessible for adjustment if necessary.
- Motor equipped with an integral automatic thermal overload protector.
- Cold air return easily fitted into top of unit.
- No metal-to-metal contact between blower and casing.
- Bearings and motor are rubber cushioned.
- Low speed, quiet blower minimizes noise and vibration.
- Top motor mounting . . . keeps the motor off the floor, away from moisture . . . permits use of more compact housing . . . requires minimum of floor space.

LAU Package Units are manufactured in varying capacities suitable for dwellings of from five to eight rooms. All sizes available with quick delivery.

Get the facts before you buy. Only LAU can offer you unmatched quality at such low prices. Write today.

Now . . . you have the opportunity to gain added profits and new business with this modern, efficient blower-filter unit. "Critical fuel shortage"—that's what is plaguing the consumer . . . and you. With the extreme gas and oil shortage, thousands of consumers are demanding better and more economical ways of heating. You can help them and yourself, too, by recommending this efficient, low cost unit.

The LAU 400-A Series Package Unit is the obvious means of obtaining relief at low cost and with *outstanding* performance. The efficiency of any gravity type warm air furnace can be stepped up immediately. More evenly balanced temperatures provided automatically and quickly. All rooms in the home become pleasant and comfortable with warm, dust-free air. Handsomely styled, the LAU Package Units have well-proportioned casings . . . ruggedly constructed of heavy gauge steel. Full, round corners. Surf green baked enamel finish. Chromium hardware. Filters are of throw-away type and all 1" thick.

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## Reduces Die Cost BY LENGTHENING DIE LIFE

Weirzin has a tight electrolytic zinc coating that lubricates dies without danger of leaving a zinc deposit. Die maintenance expense is thereby sharply reduced, and the life of the die increased.

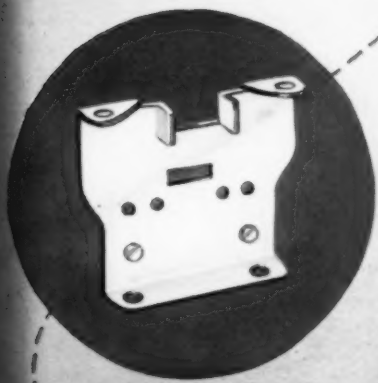
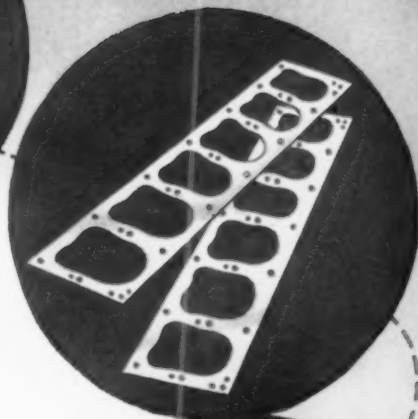
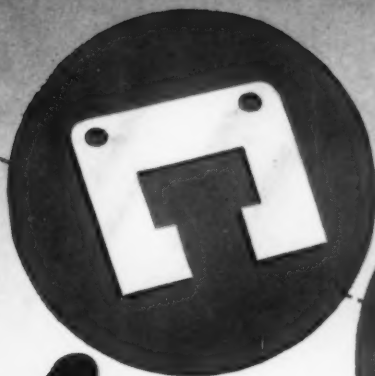
A specific example of this, reported by a fabricator, relates that instead of the usual production run of 100,000 pieces from dies when using ordinary carbon steel, change to Weirzin increased production to over 400,000 pieces. This 300% average increase in production per set of dies is too great a factor in present-day costs to be ignored. You might find such an opportunity in your own plant.

The most severe fabricating operations will not cause Weirzin to peel, flake or powder. Its electrolytic zinc coating remains intact under deep drawing or difficult forming and bending operations without deterioration. For more specific information, write

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- There is a Niagara machine and tool to save time, effort and money in sheet metal shops. Niagara offers a complete line for hand, foot and power operation. Modernize your shop for today's conditions and materials, ...write for Catalog 94.

*Foot Shears*

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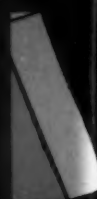
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From a text of the 1860's...  
*"A Practical Treatise on Ventilation"*

"Pray, remember: fresh air, pure air gives elasticity to the step, buoyancy to the spirits, secures serenity to the pure of heart, adds a sparkle to the eye of innocence, induces good digestion and sound, refreshing sleep."

# We've come a Long way since then!

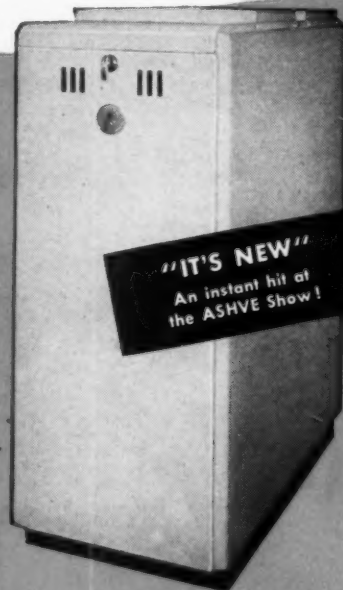
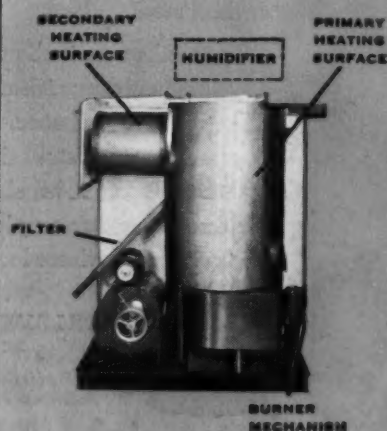


Whether or not Richmond's new Oil Winter Air Conditioner will "secure serenity to the pure of heart, or induce good digestion . . ." (see text above), we really

couldn't say. But, be sure of this: the Richmond Oil Winter Air Conditioner is specifically designed to meet every requirement in small, low-cost home installations.

## Only Richmond Offers All These Features

1. Vaporizing type with unusually low pilot flame—as little heat as a gas pilot. No overheating in mild weather.
2. Automatic control of oil-air ratio at all stages of fire—keeps pot purged!
3. Delivered completely assembled and wired—estimated saving \$20 to \$35 on installation costs.
4. Horizontal design permits quick, easy duct installation on low headroom jobs.
5. Beautiful finish in durable, heavy white enamel.
6. Capacity: 75,000 Btu. at bonnet.



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Tests conducted by the American Society for Testing Materials prove that steel sheets of this analysis have far higher resistance to atmospheric-corrosion than sheets of ordinary carbon steel.

For further protection against rust, Beth-Cu-Loy sheets are furnished with a bright coating of Prime Western zinc. This combination of a copper-bearing steel base with galvanized surfaces makes ideal sheet material for use in air ducts, conductor pipe, skylights, cornices and other jobs where long service is important.



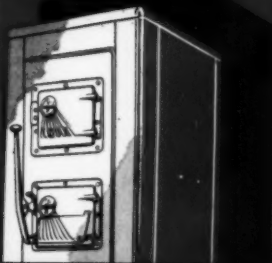
BETHLEHEM STEEL COMPANY  
BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by  
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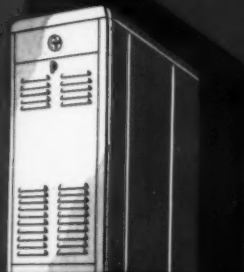


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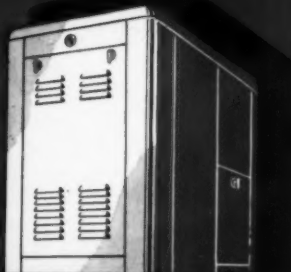




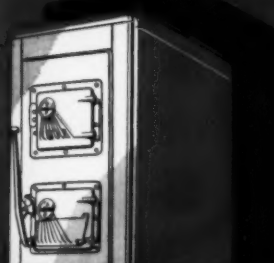
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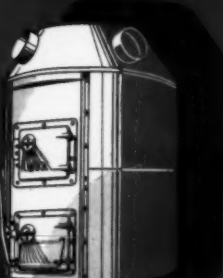
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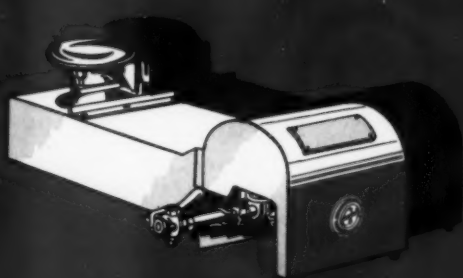
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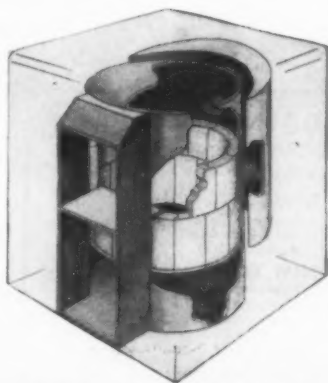


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Meet the fuel supply conditions of your own locality. Certified coal-burning units installed now will convert easily to oil or gas when increased supplies of these fuels are available for public consumption. If your customers can get oil but are waiting for gas, Certified oil burning furnaces are as easily convertible to gas. You can take care of your customers' present comfort and insure their permanent satisfaction with Certified Furnaces . . . because Certified Furnaces are right . . . right for immediate satisfaction, right to meet changing conditions tomorrow.



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# It's Spring Cleaning Time . . .

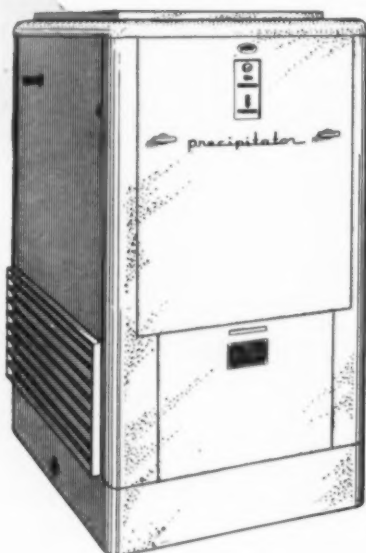
RIGHT NOW EVERY HOUSEWIFE  
IS A PROSPECT FOR A

## RAYTHEON HOME PRECIPITATOR

Want to sell clean air?

Want to sell "weeks without dusting"?

Want to talk about saving  
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Now is your chance!

Millions of housewives are about to begin the annual battle of the dust mop and the vacuum cleaner. And do they dread it!

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The Raytheon Home PRECIPITATOR is a year round seller. It's also an excellent business booster for normally "off" seasons. Feature it now to swell your profits and keep your organization working full time. Use it to open up sheet metal jobs, air conditioning sales, new heating installations. Start today.

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This miniature demonstration model is a powerful sales clincher. Shows how the Raytheon PRECIPITATOR removes smoke from the air by the magic of electronic air cleaning. It's only one of many potent sales helps. Get the whole story today. Call your PRECIPITATOR distributor.

**SELL SMOKE-FREE AIR**  
to NIGHT CLUBS, BARS, HOTELS AND  
RESTAURANTS



THE NEW RAYTHEON  
"C and C"  
PRECIPITATOR

Build extra sales with the newest Raytheon PRECIPITATOR — a brand new CLEANING and CIRCULATING UNIT for light dirt concentration commercial applications. Priced right for rapid sales to restaurants, bars, night clubs, offices, etc.

CALL YOUR DISTRIBUTOR  
FOR COMPLETE INFORMATION

### RAYTHEON MANUFACTURING COMPANY Commercial Products Division • Waltham 54, Mass. Waltham 5-5860

#### ATLANTA

Raytheon Manufacturing Co.  
306 Candler Building  
Lamar 6791

#### CHICAGO

Raytheon Manufacturing Co.  
222 W. Adams St.  
Ran. 7457

#### CLEVELAND

Raytheon Manufacturing Co.  
902 Hanna Building  
Main 3730

#### DETROIT

Raytheon Manufacturing Co.  
6432 Cass Avenue  
Madison 6300

#### NEW YORK

Raytheon Manufacturing Co.  
60 East 42nd St.  
Murray Hill 2-7440

#### WASHINGTON, D. C.

Raytheon Manufacturing Co.  
739 Munsey Bldg.  
Republic 5897



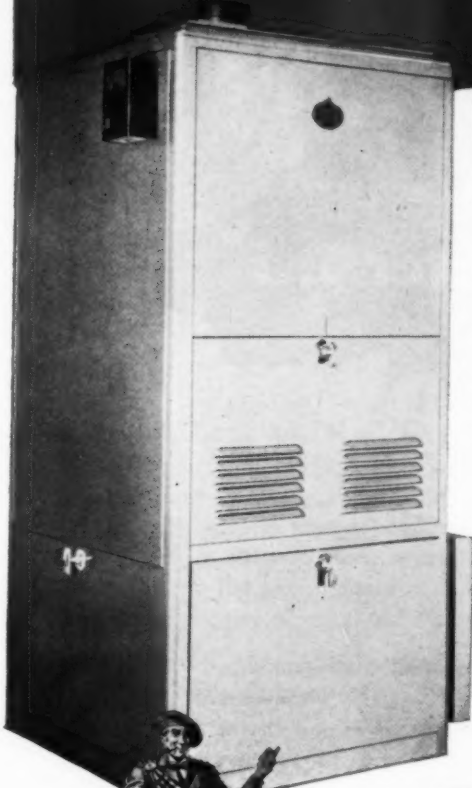
*Excellence in Electronics*

AMOUNT	NET	AMOUNT	NET	AMOUNT	NET	AMOUNT	NET	AMOUNT	NET
2.86	2.67	9.46	8.72	13.78	12.68	18.34	16.86	20.98	19.2
TOTAL 2.86		TOTAL 9.46		TOTAL 13.78		TOTAL 18.34		TOTAL 20.98	
LAST NET PAYMENT DATE		LAST NET PAYMENT DATE		LAST NET PAYMENT DATE		LAST NET PAYMENT DATE		LAST NET PAYMENT DATE	
FRIDAY, NOV. 3, 1939		FRIDAY, NOV. 3, 1939		FRIDAY, NOV. 3, 1939		FRIDAY, NOV. 3, 1939		FRIDAY, NOV. 3, 1939	

# PROOF!

## COR-O-AIRE leads

### in Low Fuel Bills!



Average Monthly Cost \$8.63, allowing \$3.50 per month for hot water, baking and cooking.

THE Cor-o-aire Hi-Boy automatic heating and winter air conditioning unit for basement and utility room installation, is popular because it's economical.

Shown here is the two story home of Cor-o-aire Hi-Boy owner, John Matthews of Cleveland. Shown also are his gas bills, irrefutable evidence of the Hi-Boy's economy of operation.

There's just one simple reason for the Hi-Boy's efficiency and economy of operation and its nation-wide popularity . . . it's the new, exclusive, patented, cast iron Venturi tube heat exchanger.

The Cor-o-aire Venturi tube heat exchanger consists of 46 tubes which allow the hot gases 28 feet of flue travel as compared to a maximum of

8 feet in ordinary heaters. The long flue travel permits the heat exchanger to extract more heat and transfer it to the cold air which is spun 'round against the outside walls of the cone shaped tubes (like water passing through a funnel).

The Cor-o-aire Hi-Boy is ruggedly constructed, has a beautiful bright blue hammerloid finish and is equipped with a large blower, filter and all the most modern automatic and safety devices.

Users everywhere are asking for an efficient gas fired basement heater. These low gas bills prove that the Cor-o-aire Hi-Boy is the basement heater that satisfies the popular demand. Write today for further information.

THE COR-O-AIRE HEATER CORPORATION  
CLEVELAND 15, OHIO

# Cor-o-aire

"THE SCOTCH HEATER" — HEATS A HOME FOR PENNIES A DAY





The Alnor Velometer Jr., 4" x 3" x 1½"; available in single or double range scales; double-pivoted, double-jeweled movement for increased accuracy.

## *Announcing* the **New Alnor Velometer Jr.!**

Here's the new Alnor Velometer Jr.—Illinois Testing Laboratories' most recent perfection in precision air velocity measurement instruments. A small, portable, completely self-contained unit, the new Velometer Jr., answers a long felt need for an accurate, instantaneous direct reading instrument that is low in cost.

Amazingly accurate . . . easy to read, this inexpensive Velometer gives direct reading of air velocity in feet per minute without bothersome timing, calculations or reference to tables and charts.

The new Velometer Jr., can be adapted to a score of uses when installing new work or maintaining efficient operation of established systems. Send for bulletin and prices!

# *Alnor*

**PRECISION INSTRUMENTS  
FOR EVERY INDUSTRY**

**ILLINOIS TESTING LABORATORIES, INC.**  
Room 538, 420 N. La Salle Street, Chicago 10, Illinois

# ARE YOU THIS LUCKY DEALER?



Lucky dealer! With an extra profitable line—DUST-STOP\* Air Filters! But it isn't all luck, that extra profit. It's good sound business sense, well applied. Here's why:

With your service in warm-air heating equipment, you have an inside track to the installations you have made. Your own customers are your best initial prospects. And with each forced-air furnace or air-conditioner requiring replacement of one to six DUST-STOP Air Filters, once or twice a year, you can see immediate profits right there.

But that's only part of the story. Every

time you make a replacement of DUST-STOP Air Filters, you have an opportunity to inspect the unit for additional service business. And every service call, too, offers the chance to check air filters. The two services are complementary, and it all adds up to good business—extra profits—for you.

There's a big season ahead—Spring house-cleaning time is clean-filter time. A Spring promotion-kit is available to help you. Contact your DUST-STOP distributor, or write Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, Ohio.

*In Canada: Fiberglas Canada Ltd., Toronto, Ontario*

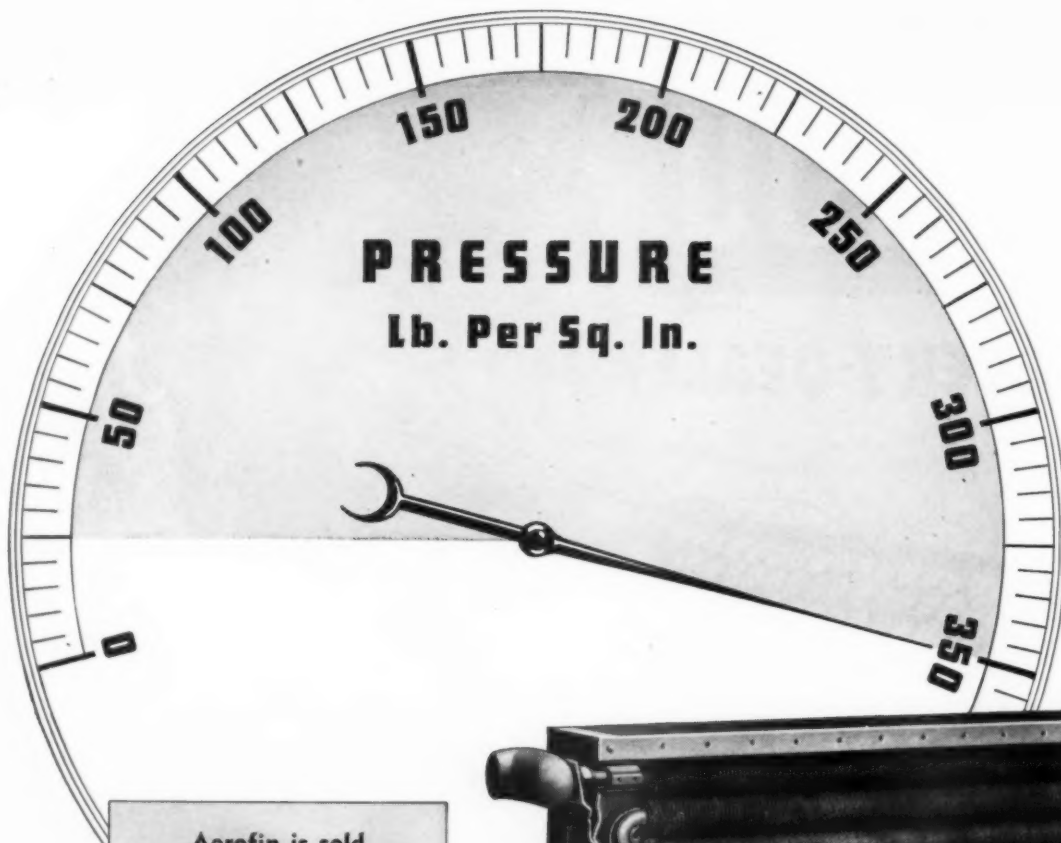
# DUST-STOP

\*T. M. REG. U. S. PAT. OFF.

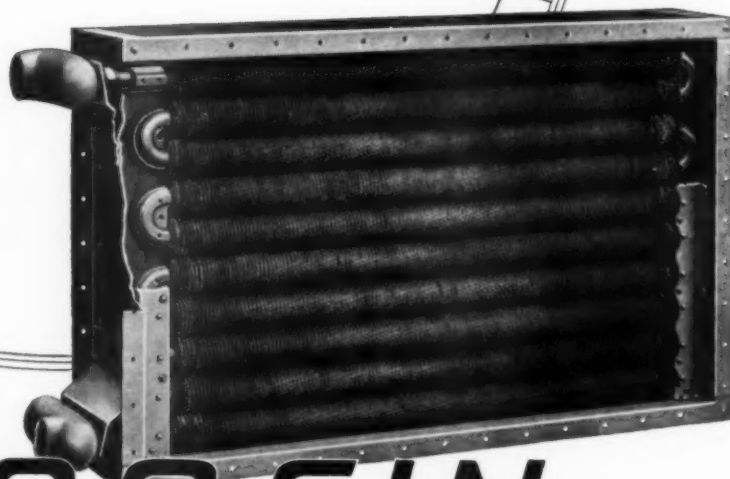
## AIR FILTERS

—a Fiberglas\* product





Aerofin is sold  
only by manufacturers  
of nationally advertised  
fan system apparatus.  
List on request.



# AEROFIN

## HEAVY DUTY HEATING COILS

### Types for all Applications

**NON-FREEZE** for entering air. Non-freezing, non-stratifying.  
**FLEXITUBE** absorbs expansion and contraction strains.  
**UNIVERSAL** incorporates S-bends with steel headers.  
**NARROW WIDTH**, straight tube for water cooling or flooded Freon systems.  
**CONTINUOUS TUBE** for cooling air with cold water.  
**CLEANABLE TUBE** with easily removed headers.  
**DIRECT EXPANSION**, centrifugal header type, for Freon expanded directly into coil.

Specially designed for use where extra-rugged coil is needed for close control. Continuous tube type. Operating pressure 25 to 450 p.s.i., temperature up to 550°F. Pressed steel headers, heavy copper tubing and fins, galvanized-iron castings. Highly efficient. Fast heating. Compact. Write for complete ratings and specifications.

# AEROFIN CORPORATION

410 South Geddes St., Syracuse 1, N. Y.

NEW YORK • CHICAGO • CLEVELAND • DETROIT • PHILADELPHIA • DALLAS • MONTREAL

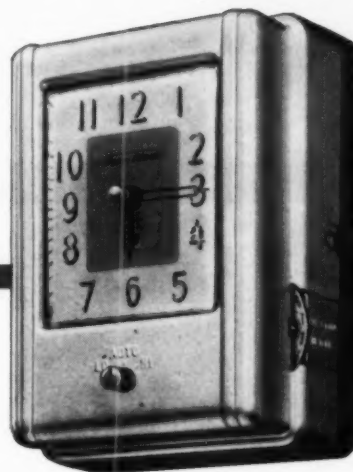
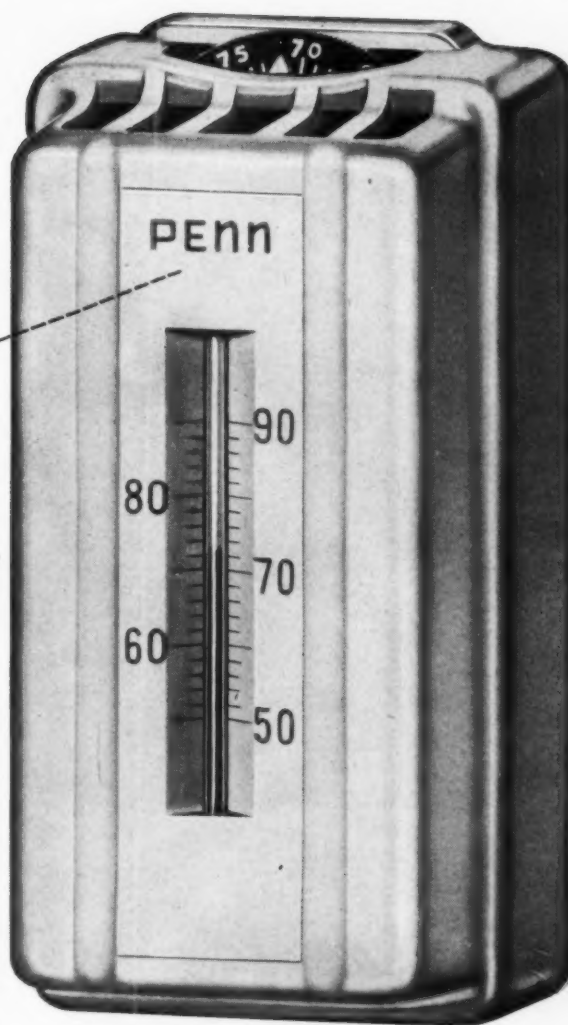


# Switch to **Penn** and Eliminate "Cold 70"

Those persistent complaints from chilly customers—service calls which cost you time and money—can be avoided by using the *Penn Heat Anticipating Thermostat*. By "sensing" temperature changes before they occur the Penn thermostat avoids the wide swings which waste fuel... the long "off" and "on" periods which cause discomfort.

Additional fuel saving is provided by Penn Tem-clock which automatically sets back temperature at night and restores comfort level in the morning. Installed separately from the thermostat, Tem-clock is more convenient—thoroughly dependable.

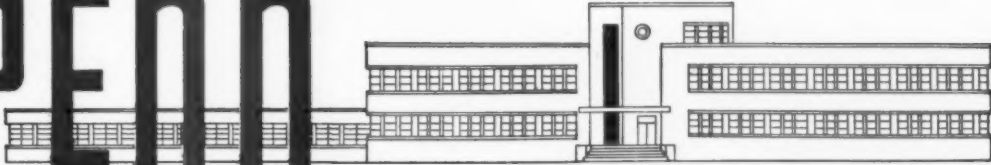
Accuracy and dependability are the outstanding features of the complete Penn line of controls for oil or coal—for warm air, steam and hot water systems. **Penn Electric Switch Co., Goshen, Indiana.** Export Div.: 13 E. 40th St., New York 16, U.S.A. In Canada: Penn Controls Ltd., Toronto, Ont.



Visit Our Booth  
**Nos. 314-316**  
National Oil Heat  
Exposition  
Chicago Coliseum  
April 5-8

Penn Tem-clock is a handsome electric time piece which may be mounted in any room, regardless of where the thermostat may be located.

# Penn



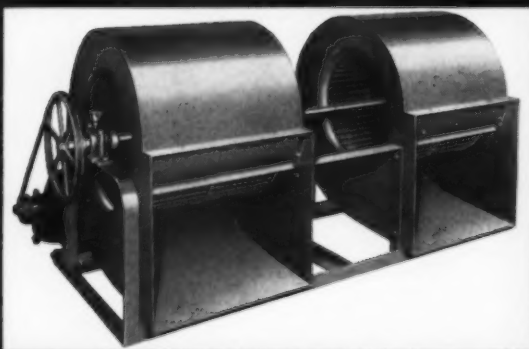
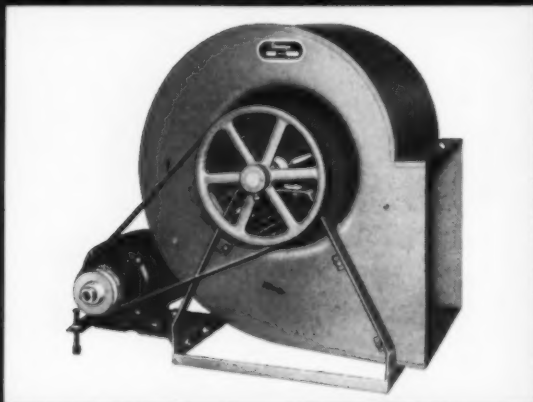
## AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

be sure of the **Best** with

## Brundage BLOWERS

PDRM Assembly, heart of the forced warm air heating system.



Brundage Twin Blower Assembly, showing style, TDRM with motor mounted at rear.

Visit our booth, Number 445-447 at the National Oil Heat Exposition, Chicago Coliseum, Chicago, Illinois. April 5 - 8, 1948.

**better craftsmanship**

**better materials**

**better performance**

For twenty-nine years Brundage has put the best of everything into their blowers. That is why today so many furnace manufacturers and dealers are asking for Brundage Blowers when they want to achieve the highest results from forced warm air heating units.

Designed by experts . . . made of quality materials . . . assembled by skilled craftsmen . . . these are three of the factors which make Brundage the leader it is today. And this is why Brundage gives you such high performance, with longer life and lower operating costs. Say "Brundage" the next time you order blowers.

THE  
**Brundage**  
COMPANY

*Blower Specialists  
Since 1919*

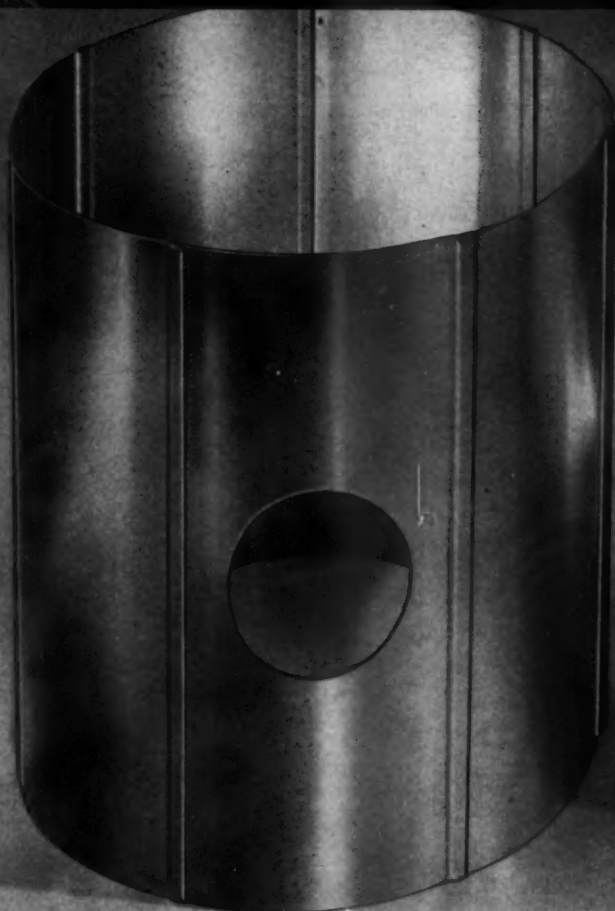
507 NORTH PARK STREET  
KALAMAZOO 11, MICHIGAN

HEAT-RESISTANT STAINLESS STEEL

**PANELOX**

(Trade  
Mark  
Reg.)

COMBUSTION CHAMBER FOR OIL BURNERS



Patent Applied for

**Installed in minutes!**  
**Heats up in seconds!**  
**Stands up for years!**

Here's the heat-resistant, stainless steel combustion chamber you've waited for—hoped for. A chamber that would heat up fast—and stand up for years. This is it—the new, revolutionary PANELOX.

See that time and temperature chart? It shows the results of an actual test. Within 15 seconds after the burner came on, the temperature in the PANELOX had already reached flash point. And within another 45 seconds it was over 1000° F.!

You know what that means—almost *instant* combustion. No minutes-long warm-up period. And that's why the PANELOX eliminates "blow-torch" starting roar, turbulence noises, and smoke, soot and oily film caused by inefficient combustion.

**EASILY QUICKLY INSTALLED!** No backfill insulation—no cementing—notools! Assemble panels through fire door in 10 minutes or less.

**INTERLOCKING SEAMS!** An exclusive PANELOX feature. Adds great rigidity and structural strength—prevents warping. No dead air spaces.

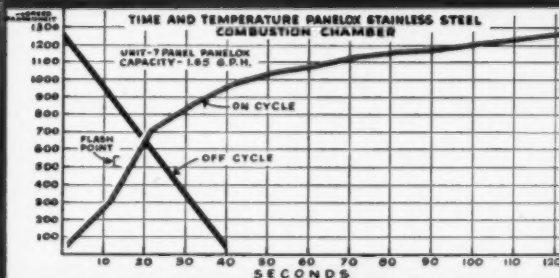


Made of finest heat-resistant stainless steel, the PANELOX withstands extreme temperatures. Easily installed in a matter of minutes—just two types of interlocking panels required for any size or shape chamber. "A" panels are standard, "B" panels have 4", 5" or 6" hole for burner gun. Light weight, easy to handle, no breakage!

From now on, the PANELOX sets the pace. So get all the facts. Write, wire or phone for full details and prices.

**SEE US AT BOOTHS 113-115 AT THE  
OHI SHOW, April 5-8  
STEFECO STEEL COMPANY**

Heating Equipment Division • Michigan City Indiana



**TESTS PROVE THE PANELOX HEATS UP FAST.**  
The Graph above shows results of an actual test. Ordinary fuel oil was used in a 7-panel PANELOX—1.65 G.P.H. Burner was a standard nationally known domestic model.



# a MERCHANDISING PACKAGE that fits any store!



The Kalamazoo franchise is tailor-made for big, steady returns. It fits the aggressive appliance merchant in any size town like a glove because *it's a complete merchandising package*:

**The Kalamazoo line is complete.**

**Kalamazoo advertising is complete** . . . from four-color pages in the big national magazines to point-of-sale displays and direct-mail pieces.

**Kalamazoo quality has been tested and re-tested** for performance and sale-ability . . . and Kalamazoo quality can't be beat!

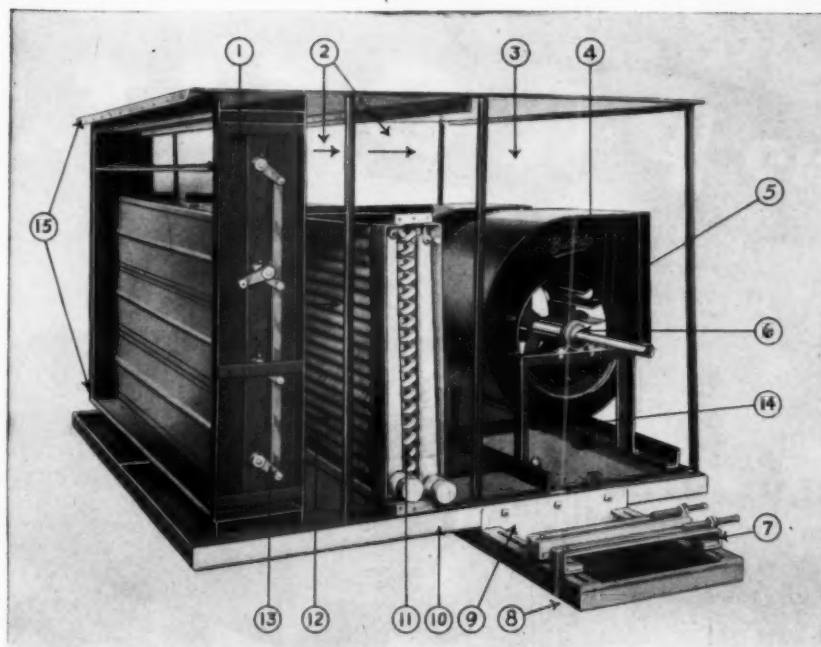
**Because Kalamazoo pricing is competitive** . . . so much so that Kalamazoo dealers get volume sales and make consistently good profits.

**The Kalamazoo franchise is complete**—there are no strings attached. It *is* exclusive.

Because of increased production, a few additional dealers will be appointed in territories where Kalamazoo is not now represented. For information, write Sales Manager, Kalamazoo Stove & Furnace Company, Kalamazoo 6, Mich.

**There's more money for you with Kalamazoo!**

**KALAMAZOO**  
HOME APPLIANCES BY  
QUALITY LEADERS SINCE 1901



BUFFALO "PC" CABINETS

# Engineered TO MAKE YOUR JOB EASIER

1. Bypass Section
2. Path of Bypassed Air
3. Plenum Chamber
4. Fan Housing, painted with Asphaltum
5. Multi-blade Wheel, designed for quietness
6. Rubber mounted, self-aligning Bearings
7. Adjustable Slide Rails — rubber-mounted
8. Welded Drip Pan under Motor
9. Universal Motor Base, fits all makes of motors
10. Heavy Welded Drain Pan with  $\frac{1}{2}$ " insulation under entire unit.
11. Continuous Tube Water Coil; Direct Expansion and Steam Coils also available
12. Path of air to be cooled by Coil
13. Face and By-Pass Dampers
14. Flat Drain Connection requiring no head-room
15. Filter Section connects here

• Easier installation and easier servicing make "Buffalo" Air Conditioning units popular with contractors! The photo above, showing casings removed, gives you an idea of the simplicity and accessibility of construction — as well as the sturdiness of all parts. Keyed description is at left.

And "Buffalo" PC Cabinets are popular with users. They do a low-cost, quiet job of cooling, heating, humidifying, dehumidifying or air cleaning in desired combinations.

Write us for engineering data on these units that make your job easier, and give highly satisfactory comfort service!

## BUFFALO FORGE COMPANY

504 BROADWAY

BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

FANS  
by  
*Buffalo*

### EQUIPMENT FOR

★ VENTILATING

★ HEATING

★ COMFORT  
COOLING

★ PROCESS  
COOLING

★ AIR  
TEMPERING

★ AIR  
WASHING

★ EXHAUSTING

★ BLOWING

★ FORCED  
DRAFT

★ INDUCED  
DRAFT

★ PRESSURE  
BLOWING

★ CLEANING

★ DRYING

CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

# CONCO Means

## YEAR 'ROUND P-R-O-F-I-T..

At Least 350,000 Oil-Wasting Burners  
*Must be Replaced!*

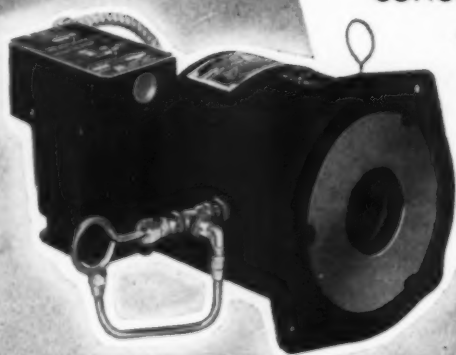


CONCO  
Magic Spray  
Oil Burner

Never before has the remarkable, fuel-stretching economy of these efficient CONCO oil burners had the business building sales appeal it has today! In approximately 1 out of every 10 oil heated homes is an obsolete, oil-wasting burner that **MUST BE REPLACED!** What a market!

CONCO dealers are showing rising profits because they have the modern, oil-saving burners the public demands.\* Yes, CONCO oil burners offer more heat from less oil... make oil last longer!

Write today for complete details on the profitable, exclusive CONCO franchise.



CONCO-BREESE  
Horizontal  
Oil Burner

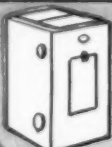
\*See them for yourself—Booth 522,  
National Oil Heat Exposition, Chicago  
Coliseum, April 5th to 8th.



WATER  
HEATERS



GAS-FIRED WINTER  
AIR CONDITIONERS



OIL-FIRED WINTER  
AIR CONDITIONERS



INDUSTRIAL  
STOKERS



STEEL  
FURNACES



DOMESTIC  
HOPPER STOKERS



DOMESTIC BINFEED  
STOKERS



CONVERSION  
OIL BURNERS

### CONCO ENGINEERING WORKS

MENDOTA, ILLINOIS



# *The* **MASTER BLOWERTROL** -the *NEW* Thermo-Electric Blower Control for Forced Air Heating & Summer Cooling.

*Continuous* blower operation throughout the heating season is permitted by *Blowertrol*.

*Air Moves* at speeds all the way from full blower capacity down to an almost imperceptible zephyr.

*Smooth and Silent Changes* in velocity are accomplished by altering the blower speed in response to changes in plenum temperature.

*Cool Air* is never permitted to circulate during the heating season except at extremely low velocity.

*Clears Ducts of Cool Air* before sufficient velocity is achieved to cause drafts in rooms.

*For Summer Cooling Blowertrol* will operate blower continuously at full speed by just pushing a button.

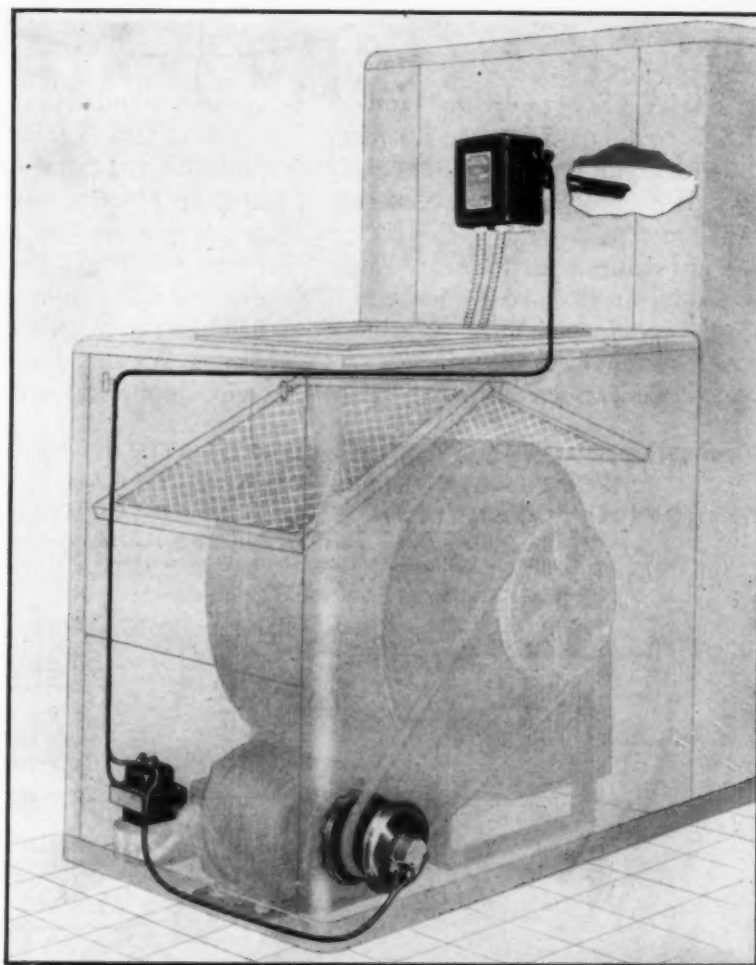
*Constant Temperature*—Maintenance of constant room temperature is greatly facilitated by *Blowertrol*.

*No Cold Zones*—*Blowertrol* avoids cold zones and uncomfortable drafts due to improper warm air circulation.

*In Mild Weather* when little or no heat is required, *Blowertrol* automatically turns the blower motor off completely.

*High Limit Switch* provided with *Blowertrol* may be set to shut down the burner at the desired high limit temperature.

The **MASTER BLOWERTROL** opens up a very large market among owners of modest small homes.



Patent No. 2322405. Other Patents Applied for. Also licensed under Patent 1885048.

## *The* **MASTER BLOWERTROL**

provides a degree of comfort and general user satisfaction far beyond the capabilities of any conventionally controlled forced air heating system. Yet notwithstanding its truly marvelous performance, its cost is still well within the means of the modest small home owner.

*Full Information Sent Upon Request*

Produced by the mfrs. of **MASTER THERMOSTATIC CONTROLS**—for over a quarter of a Century the Standard of the Industry.

**WHITE MANUFACTURING CO.**  
2362 University Avenue  
St. Paul 4, Minnesota

# The Brand most in demand . . .

● SHEETS bearing the familiar U·S·S trade-mark are big favorites . . . with metal workers . . . and with the customers of metal workers.

The men in the shop prefer U·S·S Sheets because they fabricate easily and make up into good looking, longer lasting products. Your customers prefer jobs made with U·S·S Sheets because they associate this widely ad-

vertised brand with the finest quality.

Thus U·S·S Sheets spell extra profit for you . . . through economies in shop practice and greater public acceptance for the work your shop turns out. That's why—even though demand is still in excess of supply—it will pay you to keep asking for U·S·S Sheets. We are doing our best to keep your supplier stocked.

**CARNEGIE-ILLINOIS STEEL CORPORATION,** *Pittsburgh and Chicago*

**COLUMBIA STEEL COMPANY,** *San Francisco*

**TENNESSEE COAL, IRON & RAILROAD COMPANY,** *Birmingham*

*United States Steel Supply Company, Chicago, Warehouse Distributors*

*United States Steel Export Company, New York*

7-308



## UNITED STATES STEEL

PRESENTING FOR THE FIRST TIME IN THE WARM AIR FURNACE INDUSTRY

# Korth-Aire WINTER AIR CONDITIONER



with the exclusive  
**FINNED TUBE  
HEAT EXCHANGER**



**AIR-FOIL AIR-TRAVEL**

Blower unit in Hi-boy and Lo-boy models is placed under combustion chamber resulting in verticle flow of air passing over and through FINNED heat exchanger unit.

**THE FIRST COMPLETELY NEW PRINCIPAL  
IN FURNACE DESIGN. COMPACT WITH  
OVER 50 SQ. FT. OF HEATING SURFACE**

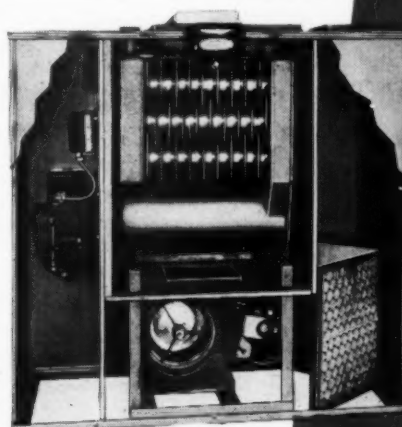
**FOUR WAY, 3 REVERSE FLUE TRAVEL • UNIVERSAL  
7" VERTICLE STACK OUTLET • HUMIDIFIER UNIT  
WITH VAPORGLAS PLATES • SIMPLIFIED INSPECT-  
O-PANEL FOR ACCESSIBILITY • COMPLETE FIBER-  
GLAS INSULATION • SCREWLESS CASING—2 SIDE  
PANELS, 1 TOP SECTION, 2 DOOR PANELS.**

Enthusiastically received at the New York Heating Show. If you missed it there, be sure to see it at the . . .

**CHICAGO COLISEUM  
NATIONAL OIL HEAT  
EXPOSITION**

**SEND FOR  
INFORMATION**

**BOOTH #339 APRIL 5 to 8**

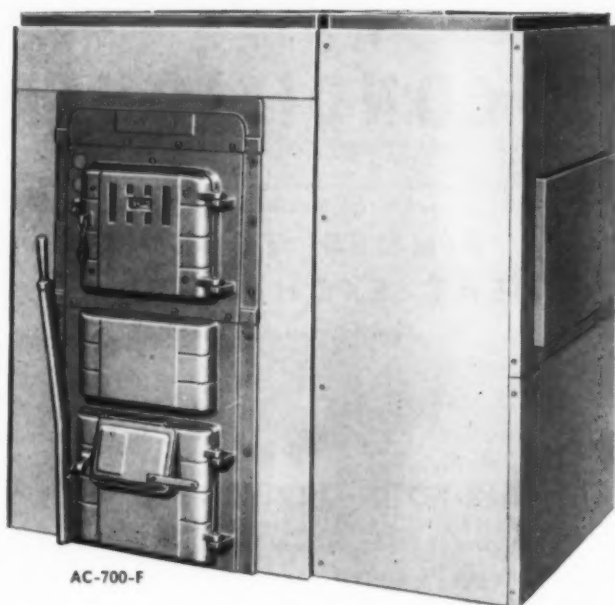


# ECKHART

**MANUFACTURING COMPANY**  
"For Over a Quarter of A Century"  
**ROSELLE • NEW JERSEY**



# PARLAY *Luxaire's* "3 in 1" UNIT



AC-700-F

## WIN BOTH WAYS!

**1.**

Engineered  
for

**1. COAL**  
Hand Fired  
Stoker Fired

EASILY CONVERTED  
and well adapted for

**2. OIL**  
*and*  
**3. GAS**

**2.**

**Greater SALES**  
**Greater SATISFACTION**  
**Greater PROFIT**

Install today for coal—with confidence! Convert at any time in the future to oil or gas with the same confidence.

Luxaire's "3 in 1" coal unit is designed and constructed so as to provide the necessary requirements and versatility for converting to oil or gas or stoker firing.

Luxaire's "3 in 1 combination" air conditioning unit is your assurance that you can meet the demands of the home heating market.



Series A  
Gas-Fired, Steel  
Air Conditioning  
Unit

Series G  
Gas-Fired, Steel  
Gravity  
Furnace

Series H  
Gas-Fired, Utility  
Steel Air  
Conditioning Unit

Series CA  
Gas-Fired, Cast  
Iron Air  
Conditioning Unit

Series CH  
Gas-Fired, Cast  
Iron Utility Air  
Conditioning Unit

You can't miss, day in and day out with this winning combination.



Series O  
Oil-Fired, Steel  
Air Conditioning  
Unit

Series VH  
Oil Fired, Steel  
Utility Air Con-  
ditioning Unit

Series VA  
Oil Fired, Steel  
Air Conditioning  
Unit

Series VG  
Oil Fired, Steel  
Gravity  
Furnace

Series 700  
Coal-Fired, Steel  
Gravity  
Furnace

Series AC-700  
Coal-Fired, Steel  
Air Conditioning  
Unit

Series C  
Coal-Fired, Cast  
Gravity  
Furnace

THE C.A. OLSEN MANUFACTURING COMPANY

*Luxaire*  **HEATING & AIR CONDITIONING UNITS**

# Name the JOB!

*There's a KRW PRESS  
that can do it  
BETTER...for LESS*

● Illustrated here are four KRW Hydraulic Press adaptations that are typical of many being built by KRW today. All are priced from 30 to 200% less than competitive makes of comparable tonnages or capacities. All are motor-driven and incorporate the time and production proven features that have made the standard KRW Hydraulic Arbor Presses...the most widely used press of their type in America. Take the KRW Sliding Head Straightening Press as an example. This type KRW Press has been effecting tremendous labor savings in fabricating plants where plate must be "trued up" before it is processed or fabricated. The heavy, hand method formerly used was archaic and very costly by comparison. The same story holds true of KRW Stretcher-Levellers, KRW Blanking and Forming Presses, KRW Compression Molding Presses, KRW Bending Presses and many others. To save your time and ours, tell us your problem in terms of what you want to accomplish. We'll give you an answer and furnish literature that is pertinent to your needs. Mail the coupon now.

MOLDING

BENDING

STRETCHING

*Write for the  
NEW  
KRW  
Catalog.....*



56

K. R. Wilson, 215 Main Street, Buffalo 3, N. Y.

Please send your catalog. We are particularly interested in your  
Bending Presses ☐ Compression Molding Press ☐  
Straightening Press ☐ Stretcher-Leveller ☐ Forming and  
Blanking Press ☐

Firm Name .....

Address .....

City and Zone..... State.....

STRAIGHTENING

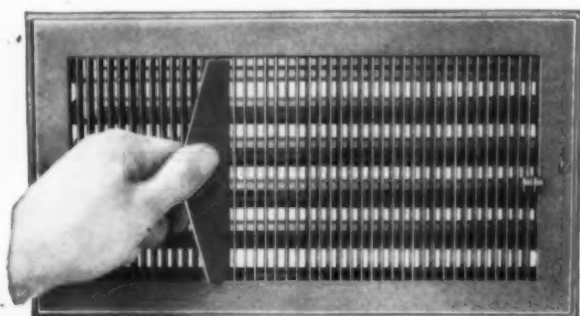
## K·R·WILSON

215 MAIN ST. · BUFFALO 3, N. Y.

**Make ALL Your Installations  
at GREATER PROFIT with**



**The ALL-PURPOSE AIR-  
CONDITIONING REGISTER**

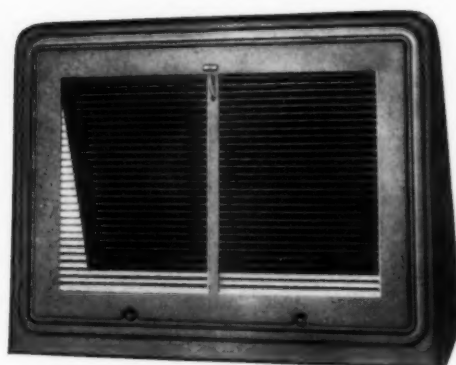


**No. 256 4-WAY FLOW A-C REGISTERS**

This is the **Most Versatile of All** Air-Conditioning Registers. It functions perfectly in sidewall or ceiling—with any direction of air approach that best fits your plans—because the multiple valves are a compact, integral part of the register. They can never interfere with the air approach from bottom, left, right, top, or back. And these valves—plus the easily-set grille bars—give you any directional air-flow desired.



**For MODERN HEATING  
SYSTEMS**



**No. 40 SERIES BASEBOARD REGISTERS**

This is the type of baseboard register to install in those smart, modern new homes, or for remodelling of old homes. Its large "free area" gives you perfect results with gravity or converted Gravity forced-air systems. The Horizontal Close Grille-Bar (Non-Vision) Design develops warmer floors. Bars can be reset for up or down flow. Centers are easily removed or attached with Engaging Buttons—no loose screws to be lost—less installation time and cost.

**U. S. Pipe and Fittings**

National Warm Air Dampers—Clips and Tips Available for prompt shipment from Battle Creek, Mich., or our nearest Branch Warehouse.  
Send for Register Catalog 47 and Fitting Catalog 41-F.

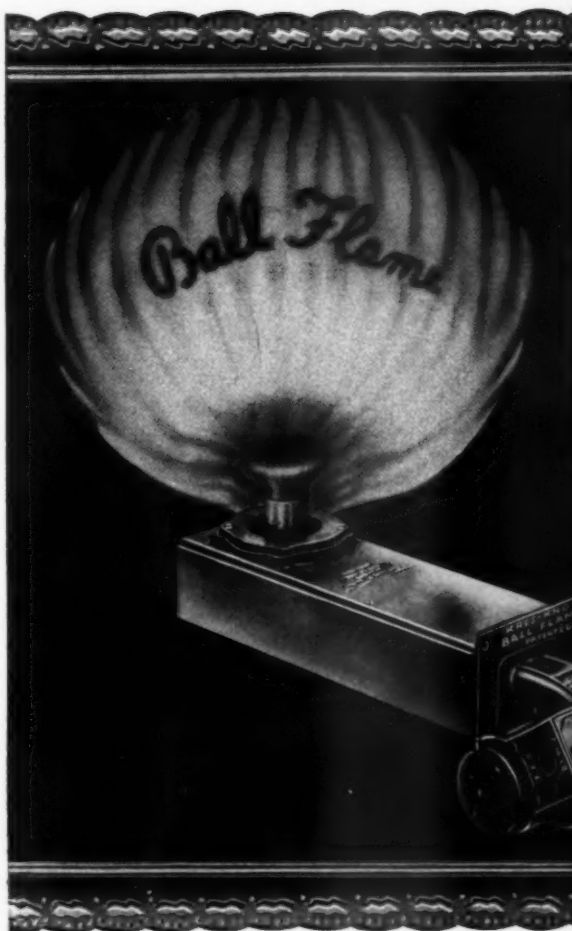
**UNITED STATES REGISTER CO.**

**BATTLE CREEK, MICHIGAN**

MINNEAPOLIS • KANSAS CITY • ALBANY



# WHY BALL FLAME BURNERS ARE FIRST CHOICE



Manufacturers of oil heating equipment dare not risk the high reputation of their products with oil burners that do not "measure up" in performance.

Perfect combustion—trouble-free operation—heating economy and efficiency are imperative. Because *Kres-Kno BALL FLAME Vaporizing Oil Burners* have proved that they are second to none for entire user satisfaction, many leading manufacturers are using them exclusively in their units for heating small and average size homes. Yes **BALL FLAME** Burners are first choice.

**Your Guide to Better Heating —  
Look for the *BALL FLAME* as  
Standard Equipment.**

**Watch for the announcement about  
our new model *BALL FLAME*  
Burner with the Electrical Ignition.**

Manufacturers — Distributors — Dealers —  
Builders send the coupon for complete details  
about this midget burner that has the perform-  
ance stature of a giant.



## KRESNO-STAMM MANUFACTURING COMPANY

Oil Burning Equipment . . . Since 1927

General Offices and Plant: 343 Commercial Ave  
Palisades Park, New Jersey

In Canada: 1452 Drummond St., Montreal  
In Europe: Dublin, Elre and Lisbon, Portugal



Kresno-Stamm Manufacturing Company  
343 Commercial Avenue, Palisades Park, N. J.

Gentlemen:

Please send me complete information on the **BALL FLAME** Oil  
Burner. I am ☐ A furnace manufacturer ☐ A distributor  
☐ A dealer ☐ A builder

Name .....  
Firm .....  
Address .....  
City ..... State .....



### *The Mercoïd Way*

One outstanding feature about Mercoïd Controls is the ease in making the necessary operating adjustments.

You simply use your fingers—no tools whatever are needed. On either the Type M-41 Furnace Limit Control or the Type M-43 Furnace Fan Control, the adjustment mechanism is alike. You press the small knob in center of the cover and turn it left for the desired low setting, then pull the knob and turn it to the right for the desired high setting as indicated in plain view on the calibrated dial. That's all there is to it—done in a matter of seconds.

This is only one of the many other features you'll like about Mercoïd Controls.

We will be glad to send you a Mercoïd catalog upon request.

THE MERCOID CORPORATION, 4201 BELMONT AVE., CHICAGO 41, ILL.

★
MERCROID



CONTROLS

FOR HEATING, AIR CONDITIONING, REFRIGERATION, AND VARIOUS INDUSTRIAL APPLICATIONS

# The MONCRIEF "HEATOMIC"

The **LITTLE** Unit that gets **BIG** results!



Series L  
Gas-Fired, Steel  
Air Conditioning  
Unit



Series W  
Gas-Fired, Steel  
Gravity Furnace



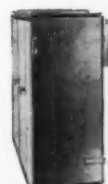
Series U  
Gas-Fired, Steel  
Utility Air Con-  
ditioning Unit



Series  
AC-700-F

● Like the atomic bomb, Moncrief's "Heatomic" all fuels, air conditioning unit is the talk of the heating market—it's the unit that lets-you-in on any heating job. Here's a new design in a coal-fired air conditioning unit that can be readily converted at any time, even after installation, to burn oil, gas or for stoker firing.

The excellent design and construction of the rugged, steel heating element, with long fire travel and large heating surface provide the necessary qualifications for the versatility of this unit.



Series CL  
Gas-Fired, Cast  
Iron Air Con-  
ditioning Unit



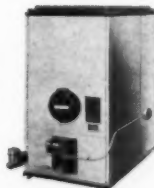
Series CU  
Gas-Fired, Cast  
Iron Utility Air  
Conditioning Unit



Series P  
Oil Fired, Steel  
Air Conditioning  
Unit



Series VW  
Oil Fired, Steel  
Gravity Furnace



Series VL  
Oil Fired, Steel  
Air Conditioning  
Unit



Series VU  
Oil Fired, Steel  
Utility Air  
Conditioning Unit



Series AC-700  
Coal-Fired, Steel  
Air Conditioning  
Unit



Series C  
Coal-Fired, Cast  
Gravity Furnace



Series 700  
Coal-Fired, Steel  
Gravity Furnace

THE HENRY FURNACE COMPANY

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

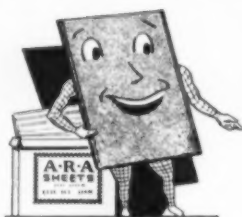
MONCRIEF

SINCE 1895

FURNACE PIPE AND FITTINGS



# COLD AIR RETURNS



## Demand Genuine A. R. A. Sheets

These nationally famous sheets are UNEXCELLED for cold air return ducts—built just the right size to cover the joist spaces perfectly. A.R.A. Sheets are light weight, weigh about 1/2 lb. per sq. ft. and are easy to handle and install.

They absorb noise, repel moisture and insulate all at the same time (K. .45 B.T.U.). Even sheet metal ducts would have to be insulated to equal the high insulating efficiency and sound deadening qualities of these popular sheets.

These scientifically built sheets can be rolled right in your shop into rounds or can be creased and folded in your brake into rectangular ducts—also, they can be fabricated into special fittings.

Buy A.R.A. Sheets today, they're available—rely on the tried and proven—millions of square feet are in use and have been in use for years.

Carton Contents  
20 Sheets 33" x 48"  
Per Carton

Shipping Weight  
Approximately 100 lbs.  
Per Carton

Sheet Thickness  
Approximately 3/16"  
Thick

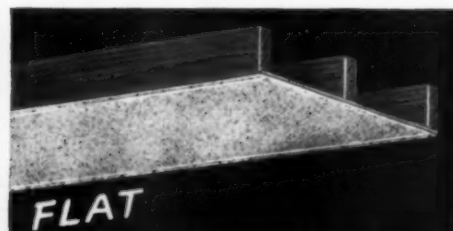
**Get Genuine A. R. A. Sheets from Your Jobber**

Write today for the free 16-Page Illustrated Booklet

No. 893-A

### GRANT WILSON, INC.

141 WEST JACKSON BLVD. AT LA SALLE ST. CHICAGO 4, ILL.  
22nd Floor, Board of Trade Bldg. Phone Wabash 8220





There's no "hand-power" in modern heating  
 . . . thanks to the Appliance Industry

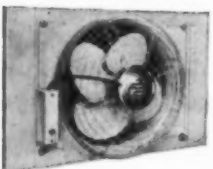
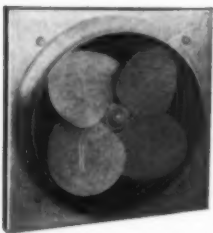
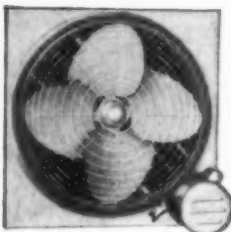
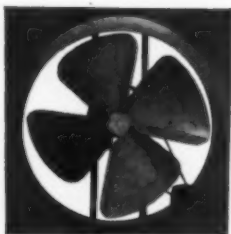


Americans have *many* reasons to be grateful to the appliance industry. For much of the ease, the convenience and the healthfulness of modern American life is due to modern American appliances. Delco Products is proud of its part in this great industry. Many of the first models of famous appliances were powered by especially developed Delco Motors. And as these products have been consistently improved, so Delco Motors have been made ever more efficient and dependable. Built in sizes from  $\frac{1}{8}$  to 50 h.p., Delco Motors are quiet, compact and designed to fit the requirements of the particular application. Delco Products Division, General Motors Corporation, Dayton, Ohio.



# SCHWITZER-CUMMINS FANS and BLOWERS

*give  
you*

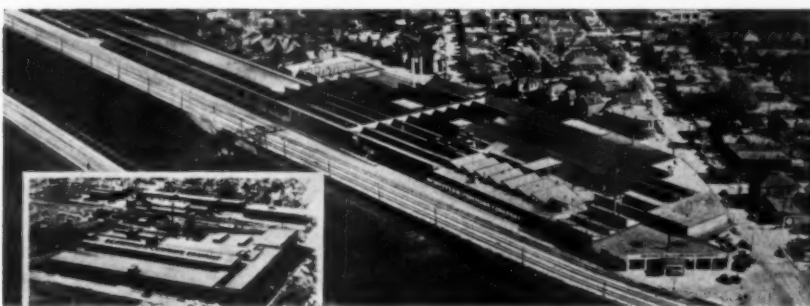


## AIR HANDLING AT ITS QUIETEST BEST

You will need the best there is in quality, performance and design in your merchandise for 1948, and all at a reasonable price. With prices what they are, you must have convincing value to offer. Schwitzer-Cummins Fresh-Air Maker fans and Hy-Duty blowers can't be beat for big air delivery, quiet operation, selling features and looks. You will like everything about them and will cheerfully O.K. this year's prices. And there are a surprising number of essential types and sizes to help you get the business and boost your profits.

- |   |                   |   |                           |
|---|-------------------|---|---------------------------|
| 1 | ATTIC VENTILATORS | 4 | ADJUSTABLE WINDOW FANS    |
| 2 | WINDOW FANS       | 5 | PORTABLE CIRCULATING FANS |
| 3 | EXHAUST FANS      | 6 | DOUBLE INLET BLOWERS      |

With our enlarged facilities we can now give good service to more dealers and distributors and have some prime territory open. We would like to present a portfolio of new literature descriptive of some very unique and interesting developments for this year's ventilating business. It is yours for the asking.



## SCHWITZER-CUMMINS COMPANY

VENTILATING DIVISION

1145 EAST 22nd STREET • INDIANAPOLIS 7, INDIANA

ENGINEERS AND MANUFACTURERS OF FINE FANS FOR 30 YEARS





TWO TYPES—  
BOTH

*Peerless  
Electric*

Belt drive assemblies with either top or rear mounted motor—with resilient bases to prevent vibration. Direct drive assemblies use specially-designed Peerless Electric capacitor motors—exceptionally efficient and quiet. Blower wheels, directly connected to motor, are forward curved, dynamically and statically balanced.



**DIRECT DRIVE *Peerless Electric*  
AIRBOY PACKAGE UNIT**

Delivers 850 cfm, sufficient for a house of approximately 10,000 cu. ft.; 3-speed motor with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced; a very compact unit. The two motor bearings are the *only* bearings in the unit.

**USE**

*Peerless  
Electric*

**BLOWER  
ASSEMBLIES**

**in your FURNACES  
and CABINETS**

**E**ELIMINATE service worries by installing Peerless Electric blowers for winter air conditioning and forced air heating.

Peerless Electric blowers—belt and direct drive types—are designed and engineered from more than 55 years of experience in building quality motors and electrical apparatus. Peerless Electric equipment is complete—manufactured entirely in our own modern plant — *not an assembled line* — and priced right, offering bigger profits to you.

*Write for detailed information.*

**[ THE *Peerless Electric* COMPANY**  
**ESTABLISHED 1893 • WARREN, OHIO**

● MANUFACTURERS OF MOTORS  
FANS AND BLOWERS

# NICE WORK—and you can get it

## when you know how to handle Stainless Steel

**T**HERE'S no good reason why your shop shouldn't be busy on the many profitable jobs that can be built better with Stainless Steel. If your men can handle galvanized steel they can handle Stainless. For working with Stainless is *not* difficult—it's just different. It requires just a little more care in some of the fabricating operations. A well-equipped shop will require no new tools or special equipment. A good crew can quickly master Stainless fabrication.

Remember too, that Stainless Steel jobs are profitable—and in more ways than one. For they build up your reputation, get you into a class of specialty work that pays off in bigger returns and more important business.

### *What's more, you can get Stainless Steel.*

Though other materials are still difficult to obtain, U·S·S Stainless Steel is available for *almost immediate delivery*.

If you need sheets in No. 2B or No. 4 finish; bars that meet high standards of machinability; plates in sizes up to 120" wide and 360" long; welded or seamless tubing; or pipe, angles and channels—and want them quickly—contact your regular supplier.

If he does not have U·S·S Stainless Steel on hand at the moment, phone, wire or write one of the warehouses of United States Steel Supply Company. There's one in your town or not far away.



## U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

8-384

### UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York  
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago • COLUMBIA STEEL COMPANY, San Francisco  
NATIONAL TUBE COMPANY, Pittsburgh • TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham  
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast: UNITED STATES STEEL EXPORT COMPANY, New York

**NO YEARLY MODELS...  
BUT CONSTANT IMPROVEMENT\***

\* THANKS TO DODGE



**T**HE MOR-SUN pressed steel FURNACE is constantly and continually under test—both in the laboratory and in the field.

*From raw material to finished product, MOR-SUN'S engineers, designers and technicians are checking and rechecking the operation of the MOR-SUN gas and oil-fired furnaces.*

These past few weeks, for instance, MOR-SUN oil-fired equipment has been made even better with new developments in both furnace and burner—to meet substandard or poor quality oil supplied the consumer in some sections of the country . . . or to reduce the margin of error in installation due to lack of experienced personnel.

In other words, MOR-SUN furnaces are under constant surveillance and receiving constant improvements—to insure a reasonable margin of safety for field operation . . . to be as trouble-free as any piece of mechanical equipment can possibly be!

#### IT ALL ADDS UP TO . . .

- Maximum heating service for consumer!
- Minimum service calls for dealer!

**M O R R I S O N  
STEEL PRODUCTS, INC.**

**BUFFALO 7, N. Y.**

"The Sun Never



Sets with MOR-SUN"

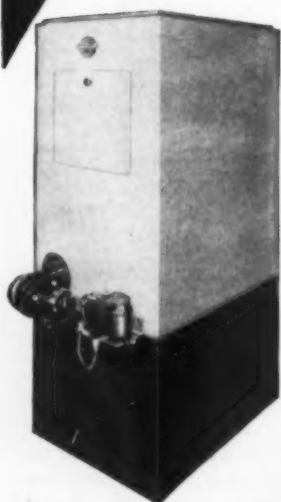


For *Today's* home builder!

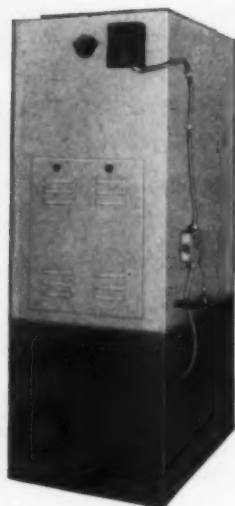
# COMPLETE Heating

at lower prices... from

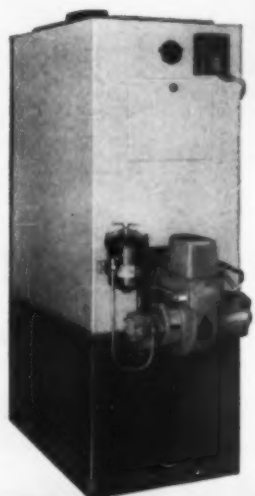
Great cost-saving combination! *Complete* heating package!  
Winter air conditioner, ductwork, grilles, registers—the "works"  
for heating today's homes—in one very profitable package!



Vikimatic Model  
1813, for fuel oil,  
with forced draft  
vaporizing burner.  
Capacity 67,000  
to 72,000 BTU  
per hr. at bonnet.



Vikimatic Model  
1513, for gas.  
Capacity 75,000  
BTU per hr. at  
bonnet.



Vikimatic Model  
1612, for fuel oil,  
with pressure  
atomizing burner.  
Capacity 85,000  
BTU per hr. at  
bonnet.

**FIRST**, any one of three great 1948 Vikimatic Winter Air Conditioners designed expressly for present-day building. Quality units to provide, along with FLATPAK preformed aluminum Ductwork, better heating *systems*, complete. Manufactured to A.G.A. and U.L. standards, finished in attractive two-toned enamel. Identical dimensions means ductwork is standard for all models. And look at these desirable mechanical features:

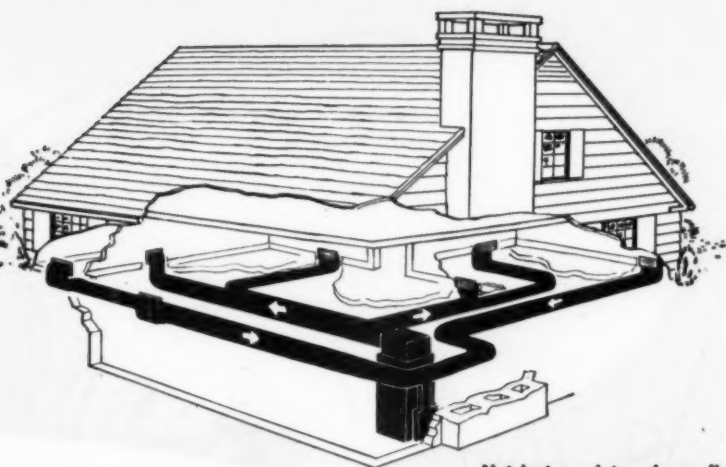
- exclusive design heat exchangers
- extra large circulating fans
- replaceable filters
- completely automatic controls
- utility room convenience  
(and basement, too!)
- easy installation
- economical operation

Any one of these units, combined with FLATPAK, gives you a cost-saving "package" for greater margin on quantity jobs.

See us at the Silver Anniversary National Oil Heat Show,  
Chicago, April 5 - 8, 1948

WINTER AIR CONDITIONERS • BOILERS • PACKAGED HEATERS • COOLING

# SYSTEMS VIKIMATIC!



Not just a winter air conditioner, but the complete heating system for modern homes! For either basement or utility room.

**SECOND**, the most amazing development in years in the sheet metal field—revolutionary FLATPAK Preformed Aluminum DUCTWORK! The newest and most efficient on the market! Ductwork in all standard sizes and shapes, preformed at the factory on precision presses; made of aluminum (one-quarter the heat loss of galvanized); and PACKED FLAT, for space-saving shipping, storing, handling!

**FLATPAK** cuts *shipping* costs! It's one-third the weight of galvanized. Your transportation is less from factory, to warehouse, to shop, to job!

**FLATPAK** cuts *storage* costs! Cartons of preformed parts take one-sixth the space of assembled units. Your warehouse stocks more, serves larger territory!

**FLATPAK** cuts *handling* costs! Sections fit together quick—easy on the job. Your labor is more efficient, handling lighter weight, assembling precision parts! And, you eliminate in-transit damages.

For *today's* home builder—modern, durable FLATPAK DUCTWORK—in combination with any one of the three great 1948 Vikimatic Winter Air Conditioners—means the *complete*, better heating system you want and need!



SEE THE DIFFERENCE! Ten vertical stack elbows of the FLATPAK line—as assembled, and as packed flat for shipping and storing! A dramatic demonstration of what FLATPAK means to you!

**SPECIAL ON QUANTITY ORDERS.** Where size of order permits shipment will be made of *exact* amount of ductwork parts and fittings for *each* home.

**THIS IS IT!** Vikimatic's great new cost-saving combination—designed to the need! Better heating systems—winter air conditioners *plus* ductwork, registers, and grilles—*complete!* At lower prices for the package—for greater profit to installer and builder!



**THE VIKING MANUFACTURING CORPORATION, 1747 Chester Avenue, Cleveland 14, Ohio**



## make these *your* Sales Curves

■ These loops of black trace the path of the graphite-filled lubricating grooves in the bushing of a Randall Pillow Block.

■ They identify the double lubrication that's exclusive with Randall . . . the oil-graphite protection that assures longer, more dependable service.

Standardize on Randalls and make this mark of quality part of your selling kit. Give your prospect a Randall Pillow Block . . . let him hold it in his hand as you show how the lubricating graphite is an integral part of the phosphor bronze bushing.

Tell how oil feeds from the reservoir in the housing, right through the graphite to the bearing surface . . . how the shaft turns almost without friction on this double-lubricating film of oil and graphite.

It doesn't cost any more to standardize on the Randall Pillow Blocks that help you sell. The Randall line is complete. There's a pillow block that's *right* . . . not too heavy, not too light . . . for every air handling job.

### Write for Catalog 47

You'll find the complete story of Randall's exclusive, double-lubricated design, the complete Randall line, and valuable installation hints, too.

### REPRESENTATIVES CARRYING STOCKS

The Berry Bearing Company  
Chicago 16

Tek Bearing Company  
Albany, Boston, Bridgeport,  
Newark, New York, Providence

Salt Lake Hardware Company  
Salt Lake City 9, Utah

Moffatt Bearings Company  
Philadelphia 30, Baltimore,  
Richmond, Charlotte, Atlanta

C. W. Marwedel  
San Francisco, Oakland

Ed W. Maltby Company  
Los Angeles 15, San Diego,  
Phoenix, Honolulu

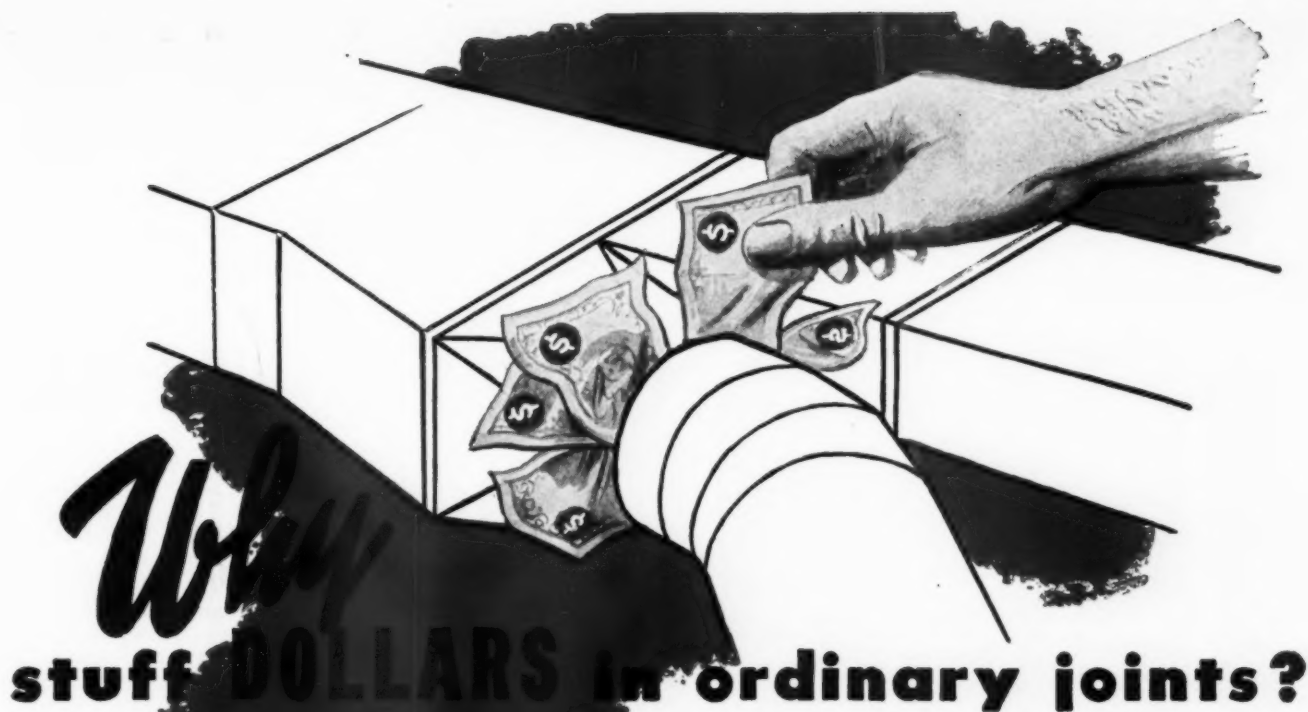
## Randall Graphite Bearings, Inc

DEPT. 311,

609 W. LAKE STREET,

CHICAGO 6, ILLINOIS





On-the-job fabrication of furnace pipe and fittings can be just as costly as stuffing actual dollar bills into the joints themselves. With Lamneck furnace pipe and fittings you get prefabricated precision fit that costs only pennies to assemble. Make all your installations with Lamneck Furnace pipe and fittings and stuff the dollar savings in your pocket.

The complete gravity line is now being supplied. The 700 System for Forced Air is complete except for plenum chamber, trunk and large fittings.

**CLAYTON & LAMBERT MFG. CO.**  
1760 DIXIE HIGHWAY, LOUISVILLE 10, KY.

*Specify...* **LAMNECK FROM YOUR JOBBER**  
Write for catalog



**Lamneck**

**FURNACE PIPE  
AND FITTINGS**

# **A**nnouncing... THE SOLUTION TO YOUR SMALL HOME HEATING PROBLEMS **QUAKER OIL FURNACES**



## **QUAKER LO-BOY**

*Tailored to the Smaller Home*

Here's the profitable solution to small home heating needs. The QUAKER Lo-Boy is engineered specifically for smaller homes. It is easy to install because it's completely assembled and wired at the factory. It's fully automatic, too. Equipped with the famous QUAKERTROL unit which regulates the flow of air and oil . . . provides a smoke-free, soot-free economical fire at all thermostat settings regardless of chimney condition . . . efficient and quiet in its operation. And QUAKER's flame-baffled heat-exchangers reduce stack losses as much as 50%! In addition, QUAKER's Lo-Boy features a powerful warm air circulator, stainless steel burner and heat anticipating thermostat. And the simple, graceful lines of the Lo-Boy will actually increase the appearance of your customer's basement.

## **QUAKER HI-BOY**

*Fits in the Utility Room*

Here's central heating for homes without basements . . . for stores and offices, too. The QUAKER Hi-Boy fits in a space less than two by three feet, and it provides all the advantages of the famous QUAKER Lo-Boy above. The QUAKERTROL unit creates its own draft . . . makes QUAKER furnaces operate at top efficiency regardless of weather or chimney condition. That's why the efficient, noiseless Hi-Boy ideally meets the heating demands of any space within its capacity. Humidifier and filters are optional on the Hi-Boy at slight extra cost.

*Manufactured by*

The Quaker Manufacturing Co. • Chicago, Ill.

**Visit Space 112-114**

National Oil Heat Exposition  
Chicago Coliseum—April 5-8, 1948



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the furnace manufacturer  
who builds his Blower  
*Assemblies retains a Greater  
Profit in his own plant...*



.. many times he is  
able to utilize  
production facilities  
that would  
otherwise be unused.

**3** **PIECE** Construction  
*Welded in One Piece*

**MORRISON**



By Using MORRISON Blower Wheels  
*Production Speeded • Product Improved*

**MORRISON PRODUCTS, INC.**  
*East 168th and Waterloo Road • CLEVELAND 10, OHIO*

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**3** **PIECE Construction**  
*Welded in One Piece*

**MORRISON**



**BLOWER WHEELS**

**By Using MORRISON Blower Wheels**  
*Production Speeded • Product Improved*

**MORRISON PRODUCTS, INC.**

*East 168th and Waterloo Road • CLEVELAND 10, OHIO*

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**EVEN**  
TRADE MARK REGISTERED  
**TEMP**  
 OIL FLOOR FURNACE

**BUS. OPPORTUNITIES** 130 BUS. O  
 BE  
 ROADS, possi  
 Finko park  
 \$1.25  
 GROC. busy  
 \$75  
 Good price.  
 FOUNTA  
 living and  
 rent.

**CASH AND CARRY**—Cor-  
 ner location, good district  
 BUSINESS

**NORTHWEST METAL PRODUCTS**  
 12 SPOKANE, IDAHO U.S.A.



## NEW LITERATURE

Use the Coupon on Page 136

### Decorative Uses of Copper and Brass . . . . .226

Copper & Brass Bulletin No. 143 (February, 1948) covers the decorative uses of copper and brass in the home, hotels, department stores, steamships, offices, banks, and for articles used for decorative effects.—*Copper & Brass Research Association, 420 Lexington Ave., New York 17, N. Y.*

### Direct-Fired Heaters . . . . .227

Bulletin 802—16 pages and cover—covers direct-fired heaters—gas or oil-fired—floor models, horizontal and inverted suspension models.

Contents cover installations, heat exchanger, convector, fans, frame, casing, outlets, control panel, gas burner, oil burner, capacity tables, dimensions, gas piping diagram, oil piping diagram, typical specifications, and company policy.—*Airtherm Manufacturing Company, 711 S. Spring St., St. Louis 10, Mo.*

### Gas-Fired Air Conditioners . . . . .228

An 8-page booklet, with photographs and drawings, describes the new Luxaire cast-iron gas-fired air-conditioning units.

Outstanding features described in the booklet are radiators cast in one piece—a single radiator on furnaces of smaller capacity and two on larger-capacity units; and a casing that permits the entire combustion chamber to be installed, inspected or removed without disturbing the cabinet, plenum chambers or duct work, and without dismantling the gas-supply manifold.—*The C. A. Olsen Manufacturing Company, Elyria, Ohio.*

### Sovabead for Dehumidification . . . . .229

Technical Bulletin T-17 (October, 1947) is entitled "S/V Sovabead for Dynamic Dehumidification." Forty pages, 8½x11, cover the control of humidity, dehumidification, desiccants and their function, static and dynamic dehumidification, and desiccants employed in dehumidification—silica gel and activated alumina.

Sovabead, its structure, composition, and performance characteristics are discussed.

Technical Bulletin No. T-21 (November, 1947) covers the importance of moisture control, performance of desiccants, methods of effecting moisture control with desiccants, Humidity—its nature and significance, application of desiccants in rust prevention, and S/V Sovabead—composition and appearance, specification compliance, availability and physical characteristics.

Graphs and tables accompany the text.—*Socony-Vacuum Oil Co., Inc., 26 Broadway, New York 4.*

AMERICAN ARTISAN, March, 1948



Of course the oil man didn't intentionally track mud all over her clean floor. But he can't help it if he has to tramp through the house and down cellar stairs to check the oil gauge.

There is a way to eliminate this tramping and tracking through the home. The answer is VENTALARM Tank Fill Signal!

On your burner service calls, tell the housewife about VENTALARM Whistling Fill Signal. Just let her know how it provides for completely automatic fuel delivery — how it assures uninterrupted privacy — oil delivery even when she's not home. Like as not she'll want VENTALARM Signal installed right away.

And you can install it while you are there on the service call. An additional sale and extra profit!



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# NEW LITERATURE

Use the Coupon on Page 136

## Air Velocity Meter ..... 230

Bulletin No. 1047—four pages— describes an improved air velocity meter incorporating the basic noble-metal thermopile principle, a larger, more accurate meter, and includes an increase in the standard range of the instrument from 2,000 to 6,000 fpm.—*Hastings Instrument Co., Inc., Hampton, Va.*

## Heating Coils ..... 231

Catalog 348, 48 pages, fully describes and illustrates the new Modine coil line, providing complete, easy-to-use performance, selection and installation data. The book is primarily designed for architects, designing engineers and contractors interested in heat transfer coil specification and installation.—*Modine Manufacturing Company, Racine, Wis.*

## Rustrem Paint—Black or Aluminum ..... 232

A new booklet on Rustrem, anti-rust paint of "1000 plus one uses" presents complete application directions and emphasizes that Rustrem can be applied directly over rusty surfaces without wire brushing or scraping. Rustrem is ideal for automotive applications (under fenders, etc.), also widely employed for gutters, water tanks, steel window frames or any metal surface subject to rust.

Rustrem is available in black or aluminum.—*Speco, Inc., 3142 Superior Ave., Cleveland 14, Ohio.*

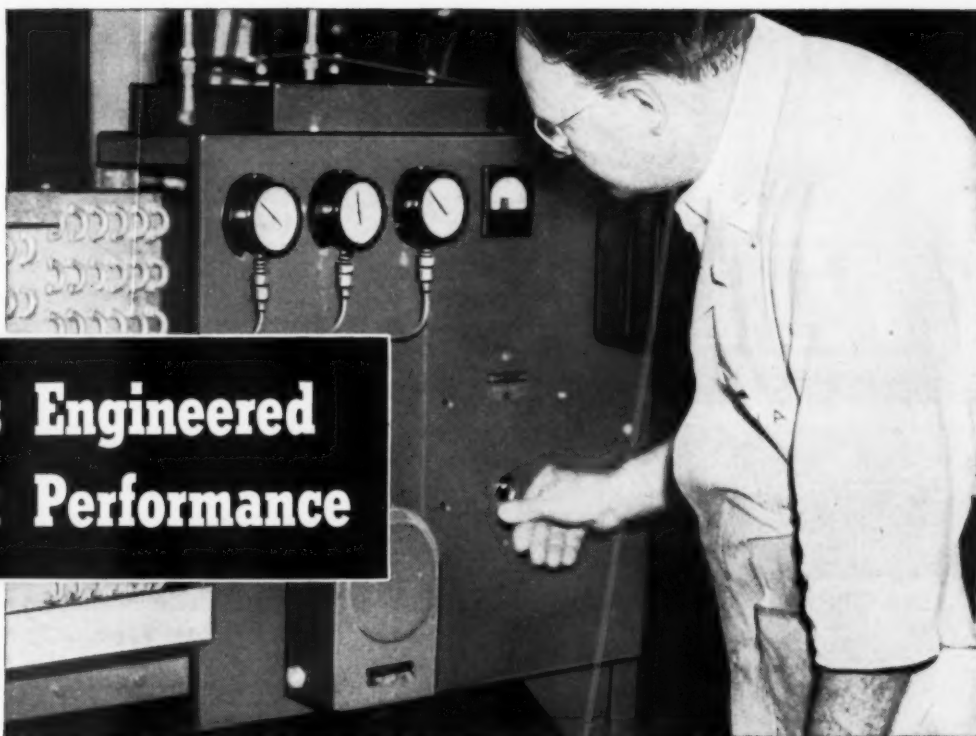
## Light-Duty Pillow Blocks ..... 233

The "Economy Twins" four-page folder is written to interest users and potential users of ball bearing pillow blocks for light-duty applications.

Main feature of the silent Ahlberg EDR pillow block is insulation against vibration by means of a moulded cushion of oil-and-grease resistant synthetic rubber. Quiet and free-running, the unit is recommended for applications demanding noiseless operation. This pillow block is pre-lubricated, electrically grounded and designed for easy mounting.

Noteworthy features of the ED ball bearing pillow block, the second "Economy Twin," are clean, trim appearance, a sturdy cast housing, single row bearing ground to permit normal shaft deflections and misalignment, and labyrinth type protective seals. Like the EDR pillow block, it is prelubricated.

Sectional views and specification charts give full details on dimensions, prices and shaft sizes.—*Ahlberg Bearing Co., 3025 West 47th Street, Chicago 32, Illinois.*



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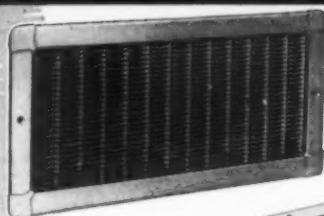


*Engineered  
Air Distribution*

# Uni-flo

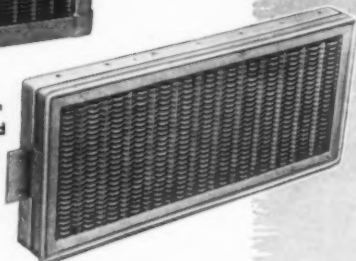
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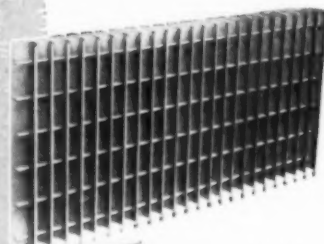
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for Reducing  
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REPRESENTATIVES IN ALL PRINCIPAL CITIES

## WITH THE CONTRACTORS

Contractors are invited to write and tell us about their new shops, new locations, new store fronts, display windows, changes in management, etc.

Pictures will be appreciated and returned, if requested.

The Waterbury Company, Minneapolis, has added two members to the personnel since the war.

Charles McDonald is purchasing agent and cost accountant—a new job in the organization. Mr. McDonald enlisted in the Army as a private and was discharged as a captain in the air corps at Dayton, Ohio, where he was a procurement officer.

Wm. F. Legler, son of F. W. Legler, joined Waterbury after his discharge in May, 1946, and has been in several departments since then to get the feel of the business. He is now in the sales department. Wm. F. graduated from the Institute of Technology of the U. of M. in 1944 and enlisted in the Navy. He served overseas in Japan on a destroyer.

Yeager Sheet Metal Company is the firm name under which Fred H. Yeager has published a certificate that he is conducting business at 1309 South Arlington Avenue, Los Angeles, Calif.

A building permit has been issued for construction of a sheet metal shop at 1339 East Washington Boulevard, Los Angeles, Calif., for George Veres of 701 West Forty-fifth Street, that city. The structure will be 40 x 80 feet in area.

A building permit has been issued for construction of a new sheet metal shop at 6180 Sepulveda Boulevard, Van Nuys, Calif., for Joe Yurosek of 7239 Kester Avenue, that city. It will be 40 x 50 feet in area.

Viele's Sheet Metal Shop is the firm name under which Fred E. and Willard F. Viele have published a certificate that they are conducting business in San Bernardino, Calif.

Contract has been awarded for construction of a new sheet metal shop building at 5867 Crocker Street, Los Angeles, for Michael J. Lowry of 1306 West Fifty-eighth Street, that city. The concrete block structure will be 50 x 110 feet in area, and will cost \$20,000.

### James Hefner

James Hefner of the Ingold Company, Hickory, N. C., passed away January 29.

Mr. Hefner was a well-known roofer throughout the Carolinas, as he spent about fifty years in the roofing business.

## WITH THE MANUFACTURERS

WM. H. WISE is now branch manager of the Chicago office of Bryant Heater Company, Cleveland, Ohio.

Mr. Wise was formerly manager of domestic sales for the Peoples Gas, Light and Coke Company of Chicago, with which organization he had been associated for the past eleven years. His previous gas industry experience was gained with the Central Illinois Public Service Company and the Middle-West Utilities.

Mr. Wise replaces C. O. Frary, former Bryant Chicago manager, who has retired after thirty years of service with Bryant Heater Company.

INLAND STEEL COMPANY has announced the appointment of John F. Smith, Jr., as general manager of sales. He succeeded Albert C. Roeth who retired under the company's pension plan. Mr. Smith joined the Inland organization in 1929 at the company's Indiana Harbor, Indiana, works. In 1930 he was transferred to the Chicago office, Order Division and subsequently became manager of that division, then in 1946 was appointed assistant manager of sales of the Sheet and Strip Division.



Smith

Davis

Truesdale

Geidt

Simultaneously the company announced the appointments of John J. Davis, Jr. as manager of sales, Railroad Division; William D. Truesdale, Jr. as manager, Claim Division; and William E. Geidt as manager, Advertising Division.

Mr. Davis joined the Railroad Division of Inland on June 23 last after having been with Carnegie-Illinois Steel Corporation, Chicago, as Manager of Sales, Railroad Material Sales. Mr. Truesdale has been Assistant Manager, Claim Division, and Mr. Geidt has been Assistant to the Advertising Manager.

JONES & BROWN, INC., has been appointed national distributor for the modulating Multi-Speed blower control.

This blower control is manufactured by National Thermal Drive Co., Inc., St. Paul, Minnesota, and sales have been increasing during the past several years. Recent improvements in the device have contributed to its service life and efficiency. The Multi-Speed blower control automatically regulates the blower speed on forced air furnaces to eliminate alternate hot and cold blasts of air.



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# venturi-flo

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**FOR...  
QUIET OPERATION and  
HIGH DIFFUSION  
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VENTURI-FLO Ceiling Outlets of the recessed type, illustrated above, are ideal for those applications where space requirements are limited. They present a pleasing appearance and allow maximum flexibility for architectural design and planning. Fittings are available for attaching any standard lighting fixture to the unit. VENTURI-FLO Outlets can also be furnished as combination supply and exhaust units or with adjustable volume control dampers.

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The VENTURI-FLO air outlet has flow characteristics similar to those of the well-known fluid measuring device — the Venturi meter. The relationship between the neck area of the unit proper and the venturi throat area is so proportioned as to create a slight back pressure in the neck at all times, thereby automatically assuring uniform distribution around the entire periphery of the unit.

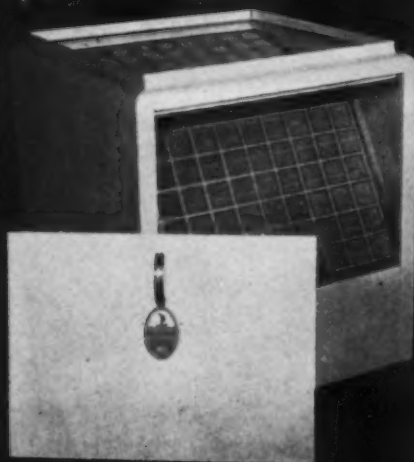


Write today for Bulletin F1497-3, giving full information on the various types of VENTURI-FLO units and their applications.

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# Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.  
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## WITH THE MANUFACTURERS

FIELD CONTROL DIVISION of H. D. Conkey & Co., Mendota, Ill., has appointed several representatives in various territories for Field barometric draft controls.

E. M. Clary, 807 Walton Bldg., Atlanta, Ga., will handle the states of Alabama, Georgia and Florida. Fred H. McGee, 1210 Broad St., Chattanooga, Tenn., will cover Tennessee while Paul R. Jett, 4053 Lindell Blvd., St. Louis, Mo., has eastern Missouri and southern Illinois.

SAMPSEL TIME CONTROL, INC., Spring Valley, Ill., has announced the appointment of D. C. Wellcome as sales manager.



D. C. Wellcome

A native of Sherburn, Minnesota and a graduate in Engineering at the University of Minnesota, Mr. Wellcome has a background of experience in both the sales and engineering phases of domestic and industrial heating controls.

Prior to his affiliation with Sampsel several months ago, Mr. Wellcome was associated with Minneapolis-Honeywell Regulator Co., Fulton-Sylphon Co., and Askania Regulator Co.

JOHN C. WALLACE retired December 31st as vice-president and director of sales for Perfection Stove Company after 34 years with the company.



J. C. Wallace

Mr. Wallace, who has held only two positions since his graduation from Dartmouth College in 1907, came to Perfection when the organization was known as the Cleveland Foundry Company, in April, 1914. It was he who organized the company's first sales

department and placed its first national advertising.

For many years, until shortly before World War II, Mr. Wallace traveled extensively for Perfection, touring every one of the 48 states and parts of Europe. When he first started with the company, its products consisted largely of oil cook stoves, portable heaters, portable ovens and enamel and aluminum ware.

Under Mr. Wallace's direction, Perfection's sales division has developed to an organization serving more than 20,500 furniture, hardware, department store and specialty shop dealers and heating and ventilating outlets.



## James L. O'Brien, Sr.

1883 - 1948

James L. O'Brien, Sr., executive general manager of the Toridheet Division, Cleveland Steel Products Company, died unexpectedly, February 7th, in New York City. His sudden demise, at the age of 65, followed a heart attack suffered while with his son-in-law at a restaurant.



One of the best known men in the oil burner industry, Mr. O'Brien, or "J.L." as he was widely known to associates and friends, had an unusual combination of talents and abilities; he was not only at home in engineering problems, but in all matters related to production, sales, management and employee relations.

He had a genius for friendship and a natural wisdom which led others to counsel with him. While his broad interests made it impossible for him to serve on many industry committees, his abilities were frequently drafted in connection with industry problems.

Mr. O'Brien started his career in oil heating in 1919, with the Hardinge Oil Burner Company, Chicago. Later he opened the NoKol organization, where he remained until 1923. At that time he was appointed general manager of the Silent Automatic Burner Company, Detroit. He took over the Toridheet management in 1932.

HENRY ARONSON, formerly with the Premier Furnace Co. of Dowagiac, Michigan has joined the staff of the Dole Valve Co., Chicago. Dole has recently created a warm air heating division and Mr. Aronson will be a sales engineer in the new department.

EDWARD M. SMITH has been appointed manager of the Chicago branch office for Penn Electric Switch Co. of

Goshen, Indiana, to succeed W. W. Lige, resigned, according to R. H. Luscombe, sales manager.

Smith has been a sales engineer with the Penn organization for the past 10 years, and is well versed in the application of automatic controls for heating, refrigeration, engines, pumps and air



E. M. Smith

compressors. During the last 2½ years, he was manager of the company's Goshen territory. Previously, Smith was manager of Penn's Detroit branch office for approximately 5 years.

The Chicago office of Penn Electric will remain in its present location at 520 N. Michigan Avenue.

# MANUFACTURERS!

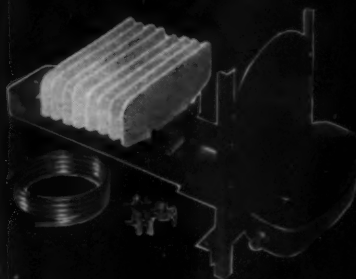
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### Puts Quality in Your Furnace

Viking Blower assemblies are recognized by the entire industry as the most efficient, trouble-free unit ever developed. And, the complete unit costs less than one you, as a furnace manufacturer, could build or assemble yourself.

## Viking Dependable Humidifiers Add Winter Air Conditioning to Your Furnace



### SERIES 1300 FOR POPULAR SIZED FURNACES

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Contains complete specifications on blower units for any size furnace at any capacity.



# Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.  
CLEVELAND 2, OHIO

## Survey and Sell

(From page 87)

bine with the oxygen and partly burned carbon will pass up the chimney in the form of carbon monoxide (CO), usually indicated by smoke. If too much air is supplied, there will be an excess of oxygen (more than can unite with the carbon). This serves to dilute the gases, cool the flame, and reduce the percentage of CO<sub>2</sub>. It is universally agreed that when the stack gases from an oil fire show 15% CO<sub>2</sub> without more than a trace of CO, combustion is perfect. Such perfect combustion is thoroughly feasible under laboratory conditions. In actual practice, however, 10% CO<sub>2</sub> is universally accepted as standard.

In an oil burner a continuous flow of oil and air in correct proportions is provided, and when the chemical reaction takes place produces heat or light. Our furnace then becomes a medium to transfer the greatest possible amount of this heat into the living space. The difference between the amount of heat

generated and the amount actually put into living space is the basis for determining the efficiency of the heating plant. The amount of potential heat contained in a fuel is determined by laboratory test in terms of British Thermal Units. One Btu indicates the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

The heat value of oil is directly related to its weight or gravity. The heavier oil contains more carbon and therefore more heat.

Suppose one pound of oil contains 20,000 Btu's and 15,000 Btu's are transferred through our heating plant for useful work in heating the home while 5,000 Btu's go up the flue. Our heating system then has an overall efficiency of 75%.

From the above it will be seen that heating efficiency assumes two phases:

1. We must attain the highest combustion efficiency by burning *all* the oil without excess air.
2. The furnace must be capable of transferring the greatest possible amount of this heat into the living zone.

To achieve the greatest efficiency in burning oil, four inflexible laws must be complied with:

1. The oil must be atomized.
2. A minimum amount of air for supporting combustion must be mixed with the atomized oil.
3. The oil must be burned in suspension.
4. The oil must be burned in the presence of a refractory.
  1. The oil is atomized by some mechanical process which transforms it from a liquid mass to a very fine fog in order that the oxygen necessary for supporting combustion may be brought intimately in contact with the infinitely small particles of the liquid.
  2. It requires approximately 15 pounds of air to support the combustion of one pound of oil and produce 15% Carbon Dioxide (CO<sub>2</sub>) or perfect combustion. This result is not attainable in practice. From 15% to 25% of excess air is introduced to ensure complete combustion with a minimum of 10% CO<sub>2</sub>. The difference in efficiency between 10% and 15% CO<sub>2</sub> is very small (See chart, page 87)

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Manufacturers of  
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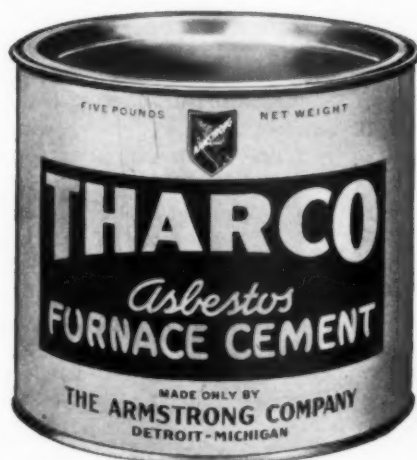
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THARCO is made to meet service conditions far more severe — far beyond — normal warm air furnace operation. That's why you can use it with complete confidence. It's the best insurance in the world of a gas-tight, smoke-tight job — of jobs that bring credit to your foresight and workmanship. No costly complaints, no doing the work twice — with Armstrong's THARCO. Your jobber can supply you, or write us for complete information.

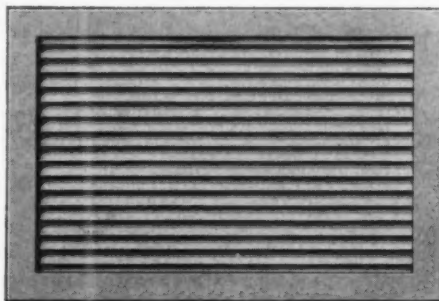
**THARCO**  
*Will not shrink,  
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*For easier  
application!*



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**NO-VISION GRILLES  
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Where ventilation without vision is desired—in doors, walls and partitions—Independent No-Vision Grilles meet every requirement. It's impossible to see through an Independent No-Vision Grille from any viewpoint.

Independent No-Vision Grilles are made in two styles—Style C, with grille core only, installed with molding as shown above; Style R, with overlapping rim on all four sides of one surface of the grille, as illustrated at the left.

Independent No-Vision Grilles are made in 46 standard sizes, for openings from 8"x 6" to 30"x 24", and additional sizes can be furnished.

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registers and grilles for every purpose.*



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3. To realize why the oil must be burned in suspension, we must understand that after it is atomized and ignited oil is subjected to great heat of its own generation and is ultimately vaporized. If, before vaporization takes place, the oil is permitted to strike a cooling surface, the oxygen is unable to surround the particles and combustion will not be complete. This results in partially burned oil either going out the flue as carbon monoxide (CO) or depositing on inside surfaces of the furnace in the form of soot.

4. In surrounding the flame with a refractory, this material quickly reaches a high temperature which is reflected back into the combustion zone. This reflected heat contributes to the vaporization of the oil and also creates additional turbulence essential to intimate mixing of oil and air for clean, complete combustion.

#### **Instruments**

Thus, it will be seen that to obtain the best results from an oil heat installation, the job must be accurately and intelligently engi-

neered. Final adjustment will be made with instruments which measure the percentage of CO<sub>2</sub>, Stack Temperature, and draft.

The importance of correct and uniform draft will be first considered. We understand that the function of a chimney is to create an upward movement of air, pulling it from our basement through the heating plant to the outside and carrying off waste gases. The natural draft is subject to great fluctuation due to changing wind velocities, direction, and outside temperatures. Our first concern is to stabilize the draft to compensate for these variations. Therefore an automatic draft control or stabilizer must be a part of every oil heat installation.

With a draft gauge inserted through a hole in the fire door, adjust the weights on the draft control so that a uniform pull of .02 to .04 inches of water is obtained. Next, a thermometer is inserted in the smoke pipe, near the furnace and the firing rate adjusted to produce an acceptable stack temperature.

Now we are ready to check the

completeness of the combustion process. This is done with an instrument called an "Orsat", which gives a direct reading in percent of CO<sub>2</sub>. It consists of an upper and lower chamber connected by a glass tube bearing etched graduations from 0 to 20, each division representing 1% CO<sub>2</sub>.

The lower chamber contains a chemical fluid having the ability to absorb CO<sub>2</sub>.

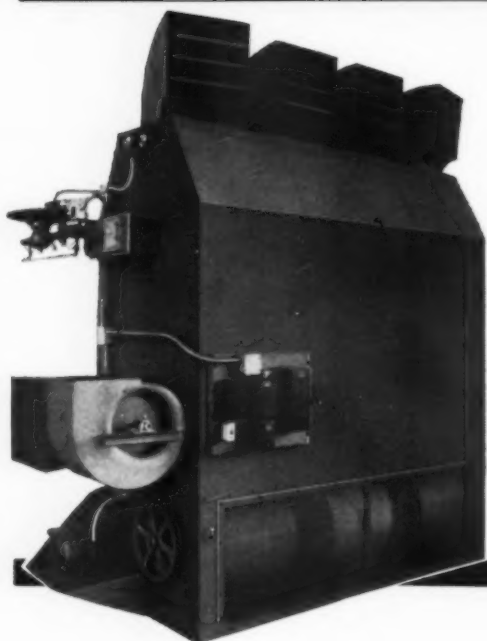
The upper chamber receives the sample of flue gas through a tube extending into the smoke pipe and a valve on the top of the chamber seals it in. A filter is inserted in the tube. The purpose of this filter is to condense out the water vapor and permit only the CO<sub>2</sub>, CO and O<sub>2</sub> to pass into the instrument.

Now when we pump in and seal a sample of the gas and tip the instrument a few times the fluid absorbs the CO<sub>2</sub> and increases its bulk accordingly. Then when the Orsat is held upright the liquid flows up in the tube where direct reading of the per cent of CO<sub>2</sub> is made.

Now with the Stack temperature and CO<sub>2</sub> we can refer to the table (p. 87) and determine our combus-

## **AIR THERM DIRECT-FIRED WARM AIR HEATERS**

**Offer You These Six  
Heating Advantages**



- ① A complete factory heating unit.
- ② Comes to you ready to set in place.
- ③ Control system wired at factory.
- ④ Available in floor-mounted or suspended models.
- ⑤ Oil burners or gas burners are interchangeable to meet future fuel conditions.
- ⑥ Capacities from 650,000 to 1,950,000 BTU per hour.

*For detailed information, write for Bulletin 801-A.*

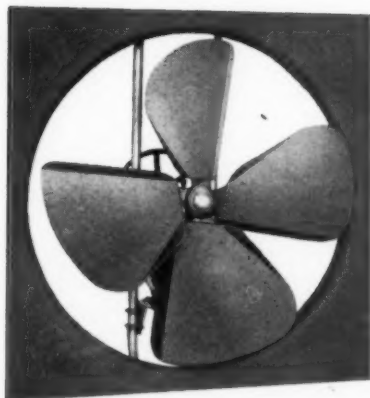
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*"Weathercrafters  
for the  
Nation"*



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Patent Pending

Here's a time and material saver for speedy and air tight installations of trunk line and wall stack fittings with all the "Know How" of years of experience in the manufacture of precision "Made-Rite" fittings. Write for complete details today and you will receive our prompt attention.

**Order Furnace Fittings from**

***"Made-Rite"***

**NO JOB** can be better than the fittings you use and no fittings can be better than ours. We've always made a conscientious effort to supply the finest fittings and get them out to our customers with a minimum of time and trouble.

You'll find that dealing with us will be a pleasant and profitable experience. We have a complete line of fittings and accessories to meet your every need and we're sure you'll agree that one order will lead to many more.

Wholesale jobbing inquiries respectfully invited and will receive our usual prompt attention.



***"Made-Rite"* Co., Inc.**

10th & Monroe St. Newport, Ky.



***It's Available Now!***

**The New  
JOHN ZINK  
"SHORTY"  
FLOOR FURNACE**

**50,000 Btu/hr.**

**A.G.A. Approved**

**— ONLY 26" DEEP —**

This new No. 50 floor furnace is especially designed for installation where under-floor space is limited. Being only 26" deep, it can be installed where foundations are extremely low, eliminating the necessity of making a pit.

Burns Natural, LP and Mixed Gases

**Write for Literature**

**John Zink Company**

4401 South Peoria

**TULSA, OKLAHOMA**

New York - Salt Lake City - Houston - Los Angeles

tion efficiency, which, if satisfactory, indicates a correct firing rate.

No discussion would be complete without consideration of the new catalytically produced fuel oils and their effect on oil burning equipment. "Cat-cracking" is a tremendous forward step in accomplishing the most efficient use of our petroleum resources. Yet some characteristics of the product are so different from the prewar thermal cracked distillates that many types of oil burners experience difficulty in handling this new oil efficiently.

Cat Oil is inherently cleaner and more stable than pre-war oils with respect to deterioration in storage or the formation of sediment. It does not have a tendency to oxidize and form acids, sludge, etc.

It is higher in heat value, containing a greater percentage of carbon.

Cat Oil is harder to ignite and burn, because it does not contain the light, volatile fractions common to pre-war oils. However, with an oil burner capable of finer atomization, this is no problem.

Because Cat Oil contains a higher percentage of carbon and is harder to burn, the ordinary oil burner fails to atomize fine enough to insure complete combustion. Much is wasted in the form of smoke, soot, or carbon deposit. The alternative is to supply excess air which lowers combustion efficiency. A home owner contemplating the purchase of an oil burner should thoroughly investigate the ability of the equipment to handle this new fuel.

Oil Burner installations fall into two classifications:

1. The conversion job, wherein the oil burner is engineered to a furnace not necessarily designed to burn oil.
2. The unit, which is design engineered with burner and furnace balanced and integrated into a complete heating plant.

In a conversion installation, the engineering is performed on the job, making the best of existing conditions. If the furnace was designed for coal, it is dependent on natural chimney draft to supply air for combustion, therefore the flue passes and smoke outlet are large in area. Inasmuch as the oil burner supplies the combustion air, the installer must resort to baffling or other means for obtaining the best possible efficiency. Too often it is necessary to overfire in order to obtain sufficient heat for comfort. Efficiency of 65% is generally considered the highest obtainable on conversion installations.

Furnace-burner units represent oil heat at its best. Because high efficiency is engineered into it, the performance of such a unit is not affected by local conditions. Chimney losses are held to a minimum. No on-the-site engineering is required, other than connecting the unit properly to the distribution system. Units will provide a minimum efficiency of 75% and more than 80% in many cases.

From the standpoint of appearance, the casing of a unit completely encloses all mechanism, controls and wiring.

Just as the completely insulated home represents the ultimate in *heat*-saving, the furnace-burner unit represents the ultimate in *fuel*-saving.

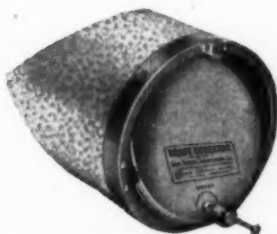


# NOW!

## C-S-E DRAFT CONTROLS IN FULL RANGE OF SIZES . . .



NO. 907

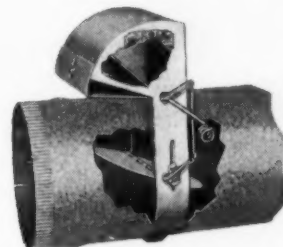


Draft KoreKtor is now made in 7" pipe size. This popular low priced control is now available in every size required for domestic heating installations. Maximum fuel saving is assured by the close fitting blade swinging on knife edged pivots. Extra large, unrestricted opening to control strong drafts. Carefully fashioned for easy installation.

Cole Draft Governors are made for every type and size of heating and power plant. Fully automatic. . . Simple and positive in action. . . Operation of the Cole Draft Governor is not hampered by soot, scale or fly ash. . . Opens instantly at start of automatic firing devices. . . Reduces loss of heated air from building. Thousands in use. A Cole Draft Governor soon pays for itself in fuel savings.



TYPE A

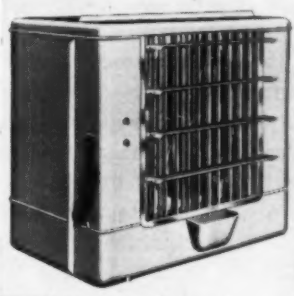


We have specialized for many years in the manufacture of draft controls. Consult us about your requirements. WRITE OR WIRE FOR FULL INFORMATION.

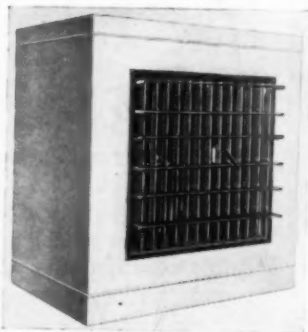
# COLE-SEWELL *Engineering Company*

2288 UNIVERSITY AVENUE

SAINT PAUL 4, MINNESOTA



## CHILL-AIR UTILITY PACKAGE UNITS



## DE LUXE CHILL-AIR 1948 WINDOW COOLER

This remarkable cooler will establish a new Chill-Air Cooler sales record. Lowers temperature from 10 to 18 degrees • cools 1 to 3 rooms • unusually quiet operation • heavy duty, 1000 R.P.M. fan motor • recirculating pump has heavy duty, totally enclosed, moisture proof motor. Installed in few minutes • no water connections necessary. Ideal for living rooms • bedrooms • apartments of all sizes • offices • trailers, etc. Dealers sold from 100 to 1200 Chill-Air coolers in 1947.

Distributors Write. A Few Choice Territories Open.

For Homes, Apartments, Offices and all commercial installations.

These units are compactly built in 3 sizes to meet almost every installation problem. Place over doors; suspend from ceiling; install in back rooms or wherever outside air is available. Dealers can save expensive electrical wiring and duct work costs. Chill-Air Package Units are especially designed for all outdoor installations.

All Chill-Air Units are highest in efficiency. Lowest in operating cost. Lowest in first cost.

## National Engineering & Manufacturing Co.

523 Wyandotte Street

Kansas City, Missouri



## DEALERS . . .

Get on the Chill-Air Band Wagon now. Write for literature, order sample units. Place your order for your season's requirements NOW! This is IMPORTANT . . . materials are critical. Chill-Air distributors in your territory will supply you.

are YOU  
selling  
OBSOLETE  
stoker  
controls?



## New FIRE PILOT Corrects 2 Stoker Faults

### COKE TREES



With the new Sampsel Thermo- Interruption Fire Pilot, coke trees cease to be troublesome! Interruptions in the firing cycle (0-7 Min.) give better combustion.

### UNBURNED COAL

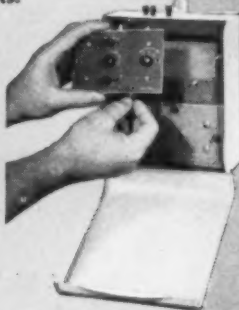


Exclusive Thermo-Inter-ruption feature prevents green coal from choking the fire — permits burning many coals formerly considered unsuitable to stoker use. Saves fuel.

### NORMAL FIRE PILOT FUNCTIONS and more!

In addition to efficient performance of the usual fire pilot functions, Sampsel's amazing new Thermo-Interruption Fire Pilot assures better operation for any stoker. It eliminates the most common stoker troubles by providing more efficient combustion. Saves servicing, too, by reducing the need for frequent minor stoker adjustments.

Thermo-Interruption Fire Pilot is easily installed, easily serviced. Thermo-Interruption Unit and Timer Unit are removable independently. No tools—just take off thumb nuts. Accessible knobs control all adjustments.



WRITE FOR LITERATURE. If you sell or service stokers you'll want to know about this truly modern Fire Pilot now. Ask for catalog showing complete Sampsel line.

**Sampsel**

AUTOMATIC CONTROLS

SAMPSEL TIME CONTROL, INC., Spring Valley, Ill.  
Canadian Sales Dist.: PEASE FOUNDRY CO., Ltd., Toronto

## WITH THE MANUFACTURERS

FRANK J. NUGENT, who since March 1944 has been general manager of appliance sales for Rheem Manufacturing Company, has accepted the position of sales promotion manager of Bryant Heater Company, Cleveland, Ohio.



F. J. Nugent

Mr. Nugent, who joined Bryant January 1st, is a recognized authority in the heating and water heating field. He is first vice president of the Gas Appliance

Manufacturers' Association and chairman of the water heater section of that organization. He is also vice chairman of the electric water heater section of the National Electrical Manufacturers' Association.

Prior to joining Rheem in 1939, Mr. Nugent had been associated with Koppel Car and Equipment Manufacturing Company, the Blaw Knox Company and the Pittsburgh Water Heater Sales Company. He is a native of Pittsburgh and attended Duquesne University and Carnegie Institute of Technology.

LINCOLN ELECTRIC COMPANY, Cleveland, Ohio, has announced the appointment of Mr. G. E. Tenney as service manager to direct the policies and operations of a newly expanded service department. To the task of creating an organization to handle the servicing of Lincoln equipment on a national scale, Mr. Tenney brings the experience of fifteen years as district manager for the Lincoln Chicago office. It was largely through the efforts of Mr. Tenney and his staff that the use of arc welding as a cost reducing production tool was greatly expanded in the industries of Chicago.

Previous to coming to Lincoln in 1932 he was sales manager for the Moore Drop Forging Company of Springfield, Massachusetts.

IRVIN A. EUBANKS has been named to head the newly created post of Supervisor of Information at the Airtemp Division of Chrysler Corporation, according to an announcement by W. C. Newberg, president of the division.



I. A. Eubanks

Eubanks, a former newspaperman, joined Airtemp August 12, 1946 as editor of Chrysler Airtemp News. The publishing of the dealer and employe magazines will remain under his supervision and in addition he will have charge of all informational activities of the division.

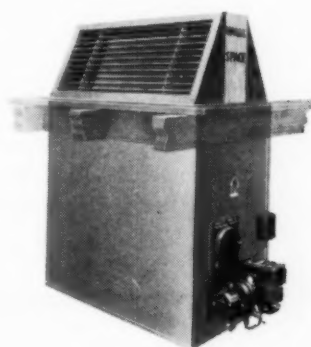
How to make a  
**WARM FRIEND**  
out of a cold customer



**Specify a KRESKY oil furnace**

You'll give him clean, instantaneous . . . economical heat he can *depend on* at all times in that new or remodeled home.

A practical model for small homes. Requires only three feet under floor. A one-man installation job. Fully automatic or manual control. The original and still the leading oil-fired floor furnace with forced air circulation bearing the Underwriters' label. The dual-register model shown at right.



**There's profit in tying to  
the most popular name  
in oil-fired floor furnaces**

KRESKY Oil heating equipment has been making American homes cozy and warm for two generations. Today, literally thousands throughout the country swear by the famous KRESKY name.

You see the KRESKY patented burner, basic unit in all models, inducts air into the oil flame in just-right amounts by an electrically operated blower to give fast, high-low, *clean* heat in all climates or altitudes. This famous unit—pioneer in its field—makes all KRESKY furnaces independent of unpredictable drafts and as dependable as a fine watch.

Write for our 1948 illustrated folder showing our full line of oil heating equipment. Also, if you are interested in a dealership, please let us know. There may be an opening in your territory.

Dept. AA

**KRESKY MFG. CO., INC.**  
Petaluma, California



AMERICAN ARTISAN, March, 1948

**"Genuine Joe"**  
Knows where to go



to get High Quality  
**Wagner Parts**  
for High Quality  
**Wagner Motors**

They are available at any of the  
**325 PARTS DISTRIBUTORS or  
AUTHORIZED SERVICE STATIONS**

**Displaying these Signs:**



It takes genuine Wagner assembly-line motor parts to retain the high quality of Wagner motors.



Reliable brush-holder assemblies.

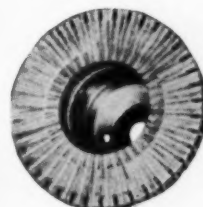
Full-finished bimetal bearings ready to install. May be had unbored for under-sized shafts.



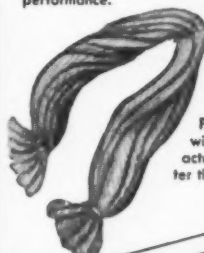
Dependable switches for split-phase and capacitor motors.



Correct grade brushes which assure satisfactory performance.



Steel-reinforced commutators.



Pure wool wicks that actually filter the oil.

Ask for

**CATALOG MU-40....**

Every repair shop needs one. It helps you determine the catalog number and price of Wagner motor parts.



6371 PLYMOUTH AVE.  
ST. LOUIS 14, MO., U.S.A.

ELECTRICAL AND AUTOMOTIVE PRODUCTS



# NEW!

## TWO DISPLAY DEALS FOR '48!



### VENTILATION

**Colorful new displays complete with electric ventilators and selling helps!**

Get into the booming fan business with these two potent sales-making display deals. Multi-color, compact displays can be used in your window, on aisle tables, counters, or flat-topped appliances. Each display factory-packed with two electric ventilators and complete set of selling helps—when deal arrives, you are ready for business! Hurry—get complete information by calling your wholesaler, sending coupon, or phoning ILG Branch Office (consult classified directory).



No. 1725 for plug-in "Portable" (window frame) models.



**ILG ELECTRIC VENTILATING CO., CHICAGO 41, ILLINOIS**  
2871 N. Crawford Ave., Offices in more than 40 Principal Cities

☐ Rush information on new display deals in "ILGMAN"

Firm Name .....

Individual .....

Title .....

Address ..... Zone .....

City ..... State .....

**Kruckman—**

(from page 71)

shall Plan is finally enacted into law. It is anticipated the Marshall Plan will become the European Recovery Act not later than May, or June. The Congress has practically agreed upon the terms. Whatever may come now is chiefly the verbal window-dressing, always providing there is no slip in the plans. The European Recovery Administration is designed to act as the business agent for the people of the United States. It will spend the money the Congress provides to purchase the machinery and the goods and the materials for the recovery of Europe. It also is expected eventually to become the agency which will do the same job on behalf of the United States, for Asia, Africa, Indonesia, the Far East, and the Near East. It will have the authority to spend vast sums. The idea seems to be that it will buy all the exportable commodities on behalf of the U. S. Government in the United States, ship them to the countries of Europe, and distribute them among the 16 countries according to the plan. It is estimated this program of purchase and distribution will cover about 70 per cent of the machinery and other goods and materials necessary for European recovery. Apparently about 30 per cent is expected to be purchased privately by the Europeans from American business people. But the impression here is that it will be found rather trying to have a minor export program

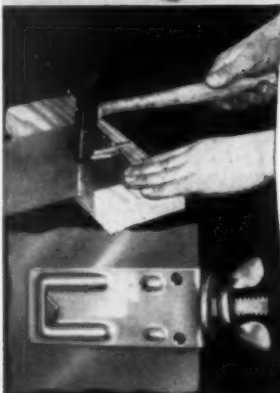
## H&C KWIK-WAY DAMPER REGULATOR SETS



**Most Easily and Quickly Attachable Sets on the Market**

**STURDY • RATTLE-PROOF NO ANVIL REQUIRED**

**IDENTICAL 5/16" RETRACTABLE BEARINGS**



Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof. Identical bearings with retractable bolt make easier installation of regular or splitter dampers in round or square ducts.

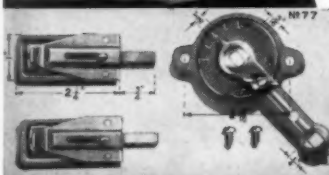
### LIST PRICES

No. 70 Set ..... \$0.30  
No. 77 Set ..... 0.40

### FOR LARGE DAMPERS

No. 50 3/4 Set ..... \$0.60  
No. 80 3/4 Set ..... 0.60

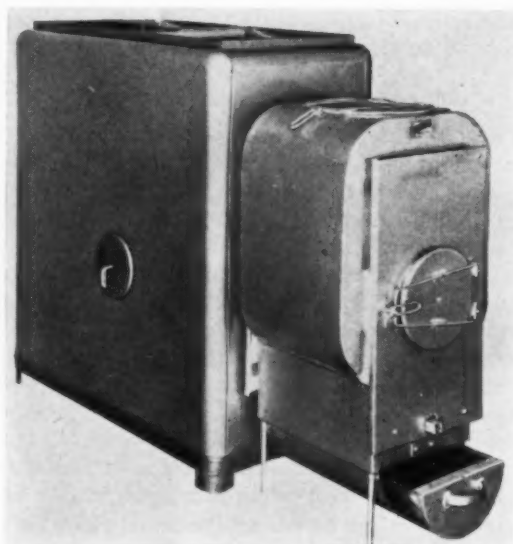
See your jobber or write for literature.



**HART & COOLEY MANUFACTURING CO.**  
**HOLLAND MICHIGAN**

# TJERNLUND "QUICK HEAT" LEADS THE WAY!

*Announcing A New Addition to Our Growing Line . . . .*



## COAL AND OIL IN ONE UNIT WITH EXCELLENT RESULTS

### FEATURES:

With our efficient hopper fed coal attachment coal can be used with "Quick Heat" units without removing the oil burner.

Both coal and oil can be burned simultaneously or separately with equally efficient results. In case of power failure or on new construction coal unit can be attached and will provide adequate heat with "Quick Heat's" excellent gravity circulation.

Our coal unit has vital parts constructed of high grade heat resistant stainless steel.

We also manufacture ceiling and wall hung industrial oil burning units in sizes up to 700,000 Btu's.

**WRITE FOR LITERATURE AND INFORMATION**

Manufactured by

**The TJERNLUND MFG. CO. 2140 KASOTA AVE., ST. PAUL 8, MINN.**

## PEXTO...

### A RESPECTED NAME IN SHEET METAL FABRICATION

You see it everywhere . . . in sheet metal shops, industrial plants, airport maintenance shops, on Navy ships. PEXTO Machines and Tools cover the entire range of requirements for excellent workmanship, smooth operation, many years of continued service.



FOLDING MACHINES



FUNNEL FORMERS

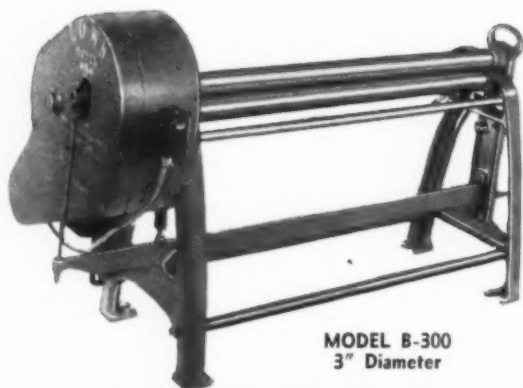


CRIMPERS AND BEADERS

8PX48

**THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHINGTON, CONNECTICUT, U. S. A.**

## LOWN Slip Roll Forming Machines FIT YOUR JOB!



MODEL B-300  
3" Diameter

If you want **MORE PRODUCTION** and **ECONOMICAL OPERATION**, use **LOWN Slip Roll Forming Machines**.

Our machines are designed for sturdiness and ease of operation to provide peak productivity.

*Rugged — Rigid — Attractive — Prompt Deliveries.*

The **LOWN Slip Roll Forming Machines** are built in a range of sizes from which you can choose the exact unit for your requirements, with roll diameters 2" through 6".

**San Angelo Foundry & Machine Co.**

San Angelo, Texas . . . . . E. Upton & SFE Tracks  
Distributors in Most Principal Cities — Write for Bulletins.

under private operation, and a major program conducted by the Government. For this reason it is anticipated the European Recovery Administration in quick order will become the over-all export agency for both Government and private procurement and for distribution in Europe. It is felt this program will especially be essential since most of the transactions in Europe will be with foreign Government agencies.

### *Permanency of Recovery Program*

It is also expected the European Recovery Administration will eventually become the agency to handle the bulk of imports from Europe to the United States. The estimate is that our Marshall Plan exports will gross approximately \$20 billion in value in the five year period now indicated. The thought is generally held that the Marshall Plan must be continued at least an additional five years, which would make a total of not less than 10 years; and that the cost will be roughly \$50 billion. At the same time, during the first five-year period, it is calculated that the Europeans will ship into the United States raw materials and fabricated materials to a total of \$30 billion. It is expected that the European Recovery Administration will handle this huge import on behalf of the Europeans, as well as on behalf of the Americans. The thought is that the ERA will sell and distribute these imports to American buyers, acting as a Government Agency on behalf of the Europeans. It is easy to perceive that this means ERA will swiftly be transformed into the biggest of big business in the world. It will undoubtedly be transformed into the greatest trading unit the earth has

## *The General*

- Make profits on every installation.
- Eliminate troublesome call backs.
- Build regular repeat business through cartridge replacements.
- Help customers save money by giving cleaner burning fuel.
- Build goodwill and customer loyalty by providing trouble-free operation.



## CAN INCREASE YOUR SERVICE DOLLAR VOLUME WITH INSTALLATIONS

### *General* HAS THE RIGHT FILTER FOR EVERY OIL HEATING PLANT!

The *General* is popular with all contractors, dealers and fuel oil service companies because it has proven the best fuel oil filter for heating plants, hot water heaters, and room heaters. The *General* will prove a profitable leader for you, too! Report after report in our files bear out these statements.

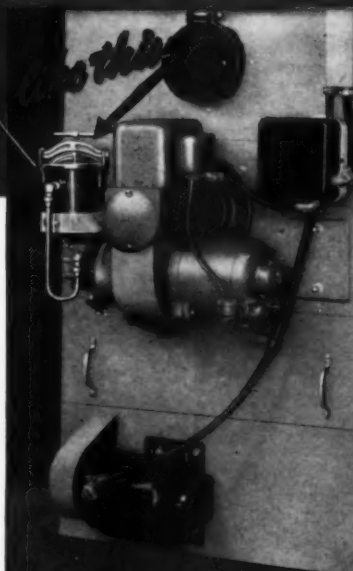
For average installations three models, DeLuxe 2A-300, Master 2A-700 and Economy 1A-25, are outstanding leaders in the *General* line because they are priced to sell easily, built to give long-lasting service, and designed to provide high-degree performance.

There is no better time than now in letting *General* Fuel Oil Filters increase your service dollar volume. Contact your jobber immediately or write direct for information and discounts.

Listed: Re-examination Service, Underwriters Laboratories

**GENERAL FILTERS  
INCORPORATED**

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, 173 STRACHAN AVE. • TORONTO 10, ONTARIO



12890 WESTWOOD AVE.  
DETROIT 23, MICHIGAN



**PRESENTING TURNER'S  
NEW LOW-PRESSURE**

No. 475

# Turner's Fire Pot



- ★ **SMOKELESS**
- ★ **SPARKLESS**
- ★ **SOOTLESS**

**ABSOLUTELY NEW! HAS TURNER'S  
EXCLUSIVE "CARBURETOR CONTROL" FOR  
MORE PERFECT COMBUSTION. MAKES  
OLD-STYLE CHARCOAL BURNERS  
OBSOLETE!**



## Compare These Features...

- Ready for operation in 5 minutes • Fuel capacity one gallon; burns for 9 hours on one filling • Safer... reduces fire hazard of old-style charcoal burners • Soldering iron rest keeps points of soldering coppers out of direct flame... saves re-tinning • Complete with Turner's exclusive "carburetor control"... providing solid blue flame with more perfect combustion; also a flame control — for exact heat desired — which automatically cleans the orifice, thereby eliminating need for separate cleaner wire • Construction assembly permits quick, easy accessibility and cleaning... windshield, top-plate, and bail handle are one unit, and can be lifted from tank in five seconds by loosening one wing nut • Burner coil made of extra-heavy seamless steel tubing... protected by sturdy outer jacket that maintains heat without overheating... can be generated and used in heavy wind.

See Your Jobber...

**THE TURNER BRASS WORKS**

SYCAMORE ILLINOIS

Since 1871

AMERICAN ARTISAN, March, 1948

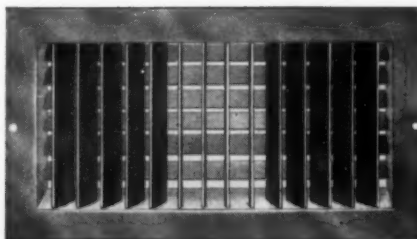
*You Can Get It **QUICKER***

**FROM  
STEWART**

## NEW IMPROVEMENTS — NEW APPEAL IN HIGH VELOCITY OUTLETS

Fast deliveries are typical of the progressive merchandising policy which keeps the Stewart line of Outlets, Scoopaires, Wall and Baseboard Registers, ahead of the field. Completely re-designed, they offer you and your customers extra advantages in smart, modern appearance, more efficient diffusion and simpler adjustments. You'll find all popular types and sizes in the Stewart line—for air conditioning, heating and ventilating. Or if you require something special, we'll make it.

### PROMPT DELIVERIES ON STANDARD SIZES



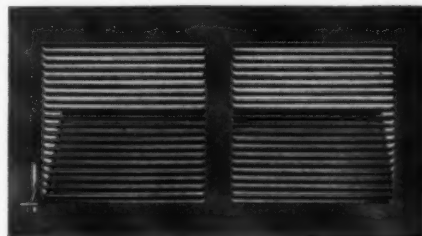
## STYLE DDV

(2 Banks)  
Individually  
Adjustable  
Face and  
Rear Bars

Style DDV is one of 8 variations of Stewart High Velocity Outlets. By means of a detachable key, all bars are adjustable for directing air straight and at various right-left or up-down angles. Style DDV has vertical face bars and horizontal rear bars. Style DDH (not shown) has horizontal face bars and vertical rear bars. This type of outlet is made in popular sizes with or without lever-operated, multiple volume valves. Matching intakes are available. OUTLETS CAN BE SUPPLIED TO FIT CONTOURS OF CABINETS FOR ROOM COOLERS.

## STYLE 91

Lever-operated  
Single Damper  
Wall Register



STYLE 91 is from the series 70-90 of Wall and Baseboard Registers made with single dampers, or multiple-valve dampers, both lever operated. Face bars of the 90 series are horizontal and set at a down angle. Face bars of the 70 series are vertical, set straight. Setting keys are furnished for user to alter bar settings. Matching grilles are available.

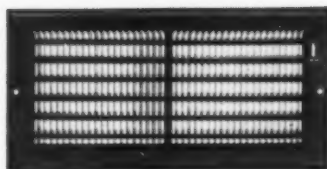
Send for literature and prompt quotation on your requirements



## EFFECTO-GRILLE

*The Line*  
**THAT SATISFIES EVERYONE:**  
 THE HOME OWNER, DEALER, JOBBER

NO. 300  
 SIDEWALL REGISTER  
 OR SUPPLY



Experience has proved that the Effecto-Grille line has the acceptance of the warm-air trade . . . Modern Streamlined Features, Top Performance and Triple Airflow are big advantages to the contractor and home owner.

We Also Manufacture  
 a Complete Line of  
 GRAVITY REGISTERS  
 and GRILLES.

- Popular Prices
- Prompt Delivery

**TURNBULL MANUFACTURING**  
**AND DISTRIBUTING CO.**

9930 FREELAND AVE.

DETROIT 27, MICH.

ever seen. There seems little doubt that it will settle down into a permanent agency despite the fact that it is to be established as a temporary instrumentality. They point out here that the Credit Commodity Corporation started its existence during the 1930 depression days purely as a very temporary agency to help the farmers to avoid bankruptcy. It was their channel to transform their grain into cash. The CCC is now an agency with a capital of \$100 million, and the authority to borrow up to \$5 billion. It was originally created by Executive Order, and still has no existence by reason of law. Despite this anomalous position, it now has jelled into a permanent Governmental institution, regarded as the most powerful single instrumentality of the Department of Agriculture. It is one of those agencies which is organized under the corporation laws of Delaware. It has a charter which virtually permits it to do almost any business its authorized officials may choose. Whether the ERA will have such extraordinary latitude and such enormous powers will naturally depend upon Congress. It will be created by Act of Congress. In Washington the hope is strong that one of its top officials may be Congressman Christian Herter, of Massachusetts, who was head of the House Committee which visited Europe last summer in order to formulate plans for European recovery. Mr. Herter knows Europe, having been in the diplomatic service in France, Belgium, and elsewhere. He is gifted as an organizer and as a humanitarian. He is well liked in Congress. Best of all, he is a good business man.

## a PEERLESS furnace for every need!

The five PEERLESS furnaces shown here comprise the most advanced line of warm air furnaces ever offered for the home market. Refinements in design and construction give you many advantages with which to outsell competition—and there is a PEERLESS furnace to meet every customer's requirements.

THE SENSATION is a deluxe steel furnace for stoker or hand firing; large blower, automatic humidifier. THE MASTER is an auto-

matic furnace for oil or gas. THE HIGH BOY (illustrated with case removed) is ideal where space is limited; blower forces maximum heat to registers. THE STEEL ROUND-CASE furnace is a favorite for either stoker or hand firing. THE COMBINATION furnace heats economically with either oil or coal.

Write or wire today for complete description of this popular and profitable PEERLESS line.



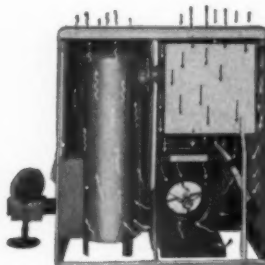
HIGH BOY



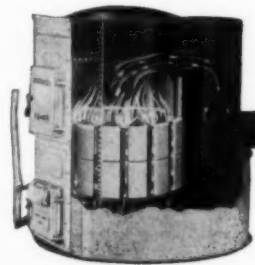
THE SENSATION



THE COMBINATION



THE MASTER



THE STEEL ROUND-CASED

**THE PEERLESS FOUNDRY COMPANY**

1855 LUDLOW AVENUE  
 INDIANAPOLIS 7, IND.

When you want to cut  
Sheet Metal fast, clean,  
without distortion...



## You need a portable SKIL\* Nibbler

• For fast, easy cutting *without distortion* of hot rolled steel or galvanized iron up to 16 gauge : . . softer materials in proportion. Perfect for cutting out damaged portions of automobile fenders and bodies . . . for cutting holes in tubes or ducts where it is necessary to retain the original contour. Light in weight (5 lbs.), more compact, and without equal for its rated capacity. See your distributor for a demonstration.

**SKILSAW, INC.**

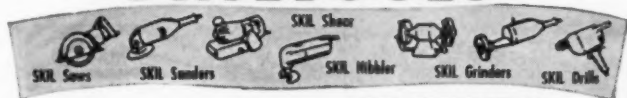
5033 Elston Ave., Chicago 30, Ill.

Factory Branches in Principal Cities

In Canada: SKILTOOLS, LTD., 66 Portland St., Toronto, Ont.

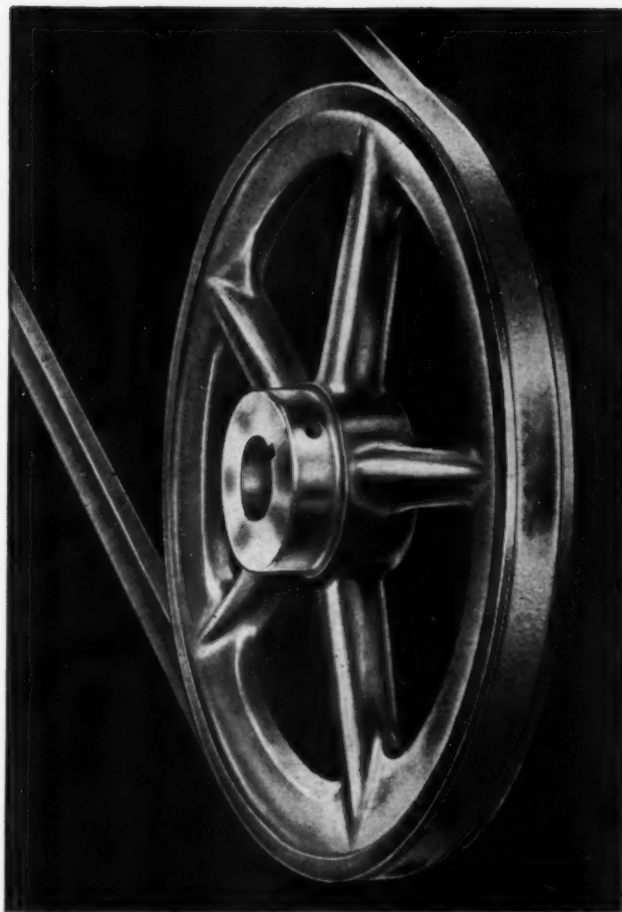
\*SKIL Nibbler is made only by SKILSAW, INC.

**ELECTRIC PNEUMATIC**  
**SKILTOOLS**



MADE BY SKILSAW, INC.

AMERICAN ARTISAN, March, 1948



## MAUREY V-PULLEYS

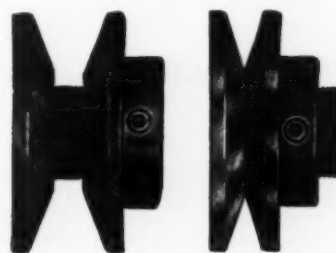
*provide a L-O-N-G step toward  
TROUBLE FREE Performance*

Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best Pulley installations for Refrigeration and Air Conditioning systems as well as for Fans and Blowers.

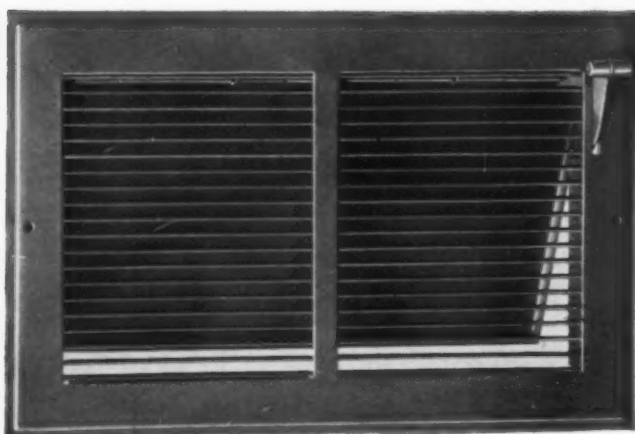
For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

**Maurey  
Manufacturing Corp.**

2915 South Wabash Avenue  
CHICAGO 16, ILLINOIS







- |                        |                         |     |
|------------------------|-------------------------|-----|
| Sidewall Register      | - -                     | #20 |
| Sidewall C. A. Grille  | - -                     | #28 |
| Baseboard Register     | - -                     | #24 |
| Baseboard C. A. Grille | - -                     | #27 |
| Floor Faces            | Prompt Delivery - - - - | #50 |

Immediate  
Delivery  
on  
5" & 6"  
Heights

## MIDCO REGISTER CORP.

1059 Grand Ave.

St. Paul, Minn.

Factory Representatives Wanted for Some Territories.

### Dingle—

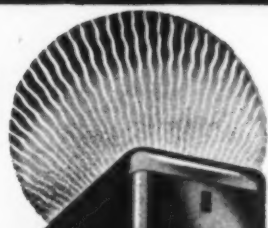
(From page 75)

ness man may give shares of stock in his company to the members of his family and thus decrease the amount of his estate, and at the same time decrease his own income from dividends, thereby saving on income taxes.

### Consult an Expert

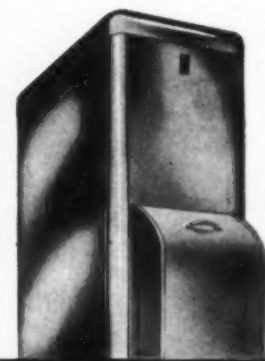
The discussion here presented is, of necessity, general and if our readers will give serious thought to their own specific problem, then go to their accountant and lawyer and with their assistance work out a plan tailored to fit the individual case, much good can be accomplished. Coupled with the plan of giving a liberal part of one's property to the members of the family before death is the matter of each donee making a will. In the case of a husband giving his wife a substantial part of his property, to avoid heavy estate and inheritance taxes it is wise to have the wife's will pass her property to the children or whoever will ultimately receive it, rather than have it revert to the husband, thereby returning his aggregate estate to its original size and putting him just where he was before. In practice, we find many men asking how, after they have given away a liberal part of their property and thus greatly reduced their annual income, they can meet unexpected contingencies. Our answer is that, having made provision for the wife and children through the gifts of a part of the property that would otherwise have gone to them upon the death of the husband and father, there is no good reason why he

## WHEN YOU THINK OF HEATING EQUIPMENT —



**OIL**

Quiet, Economical, Space Saving, Zeph-Air Oil Burning Furnaces, Easy To Operate, Easily Installed.



**GAS**

Completely Automatic Air Conditioned Gas Furnaces With The Famous Gear Shaped Cast Iron Radiation Surfaces.



**COAL**

You Buy Quality In Zeph-Air Coal Furnaces. No Costly Service Calls To Worry About.

Remember  
XX CENTURY

# ZEPH-AIR

With It's 54 Years of Engineered Efficiency in The Heating Field

It Pays To Push Zeph-Air Heating Products — Thousands of Satisfied Users All Over The Country Remember The Dependability And Reliability Their Zeph-Air Furnaces Stand For.

When a Zeph-Air Furnace Has Ended Its Long-Life and Is Ready To Be Replaced — The Customer is Almost Sure To Say — "Years of Uninterrupted Service," "Install Another Zeph-Air."

Cash In On This 54 Years of Customer Satisfaction — Stock Up On Zeph-Air Heating and Weather Conditioning Equipment — Now.

## THE XXTH CENTURY HEATING & VENTILATING CO.

96 IRA AVENUE

AKRON, OHIO

## Extra Profits In Blower Installations with

# Vent-Air

General Purpose  
**CAST ALUMINUM  
UTILITY BLOWERS**



V-5—6" (less motor) - - - \$19.00 Net  
V-10—7" (less motor) - - 24.00 Net  
V-20—9" (less motor) - - 36.00 Net

SIZE	INLET	OUTLET	WHEEL DIA.	CFM	REC RPM	REC HP
V-5	6"	6"	6 1/4"	550	1750	1/4
V-10	7"	7"	7 1/8"	1180	1750	1/2
V-20	9"	9"	9 1/8"	2280	1750	3/4 or 1

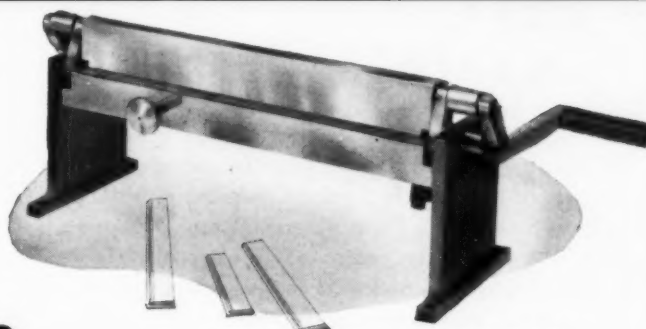
Blowers are of light weight, sturdy, cast aluminum—non-sparking. Standard diameter inlet and outlet—fit stock size pipe. Adjustable base—fits any standard motor. Adjustable discharge—rotates to four positions. Wheel statically balanced.  
We Can Supply Motors for Each Unit, If Desired

Installed with used or new motors—VENT-AIR provides a compact, efficient blower set that permits you to make a good profit for your time and trouble. Order a VENT-AIR today. Send purchase order or cash. Shipped F.O.B. Detroit.

*Fried Air-Kool Co.*  
8205 LYNDON  
DETROIT 21, MICH.

MAXIMUM AIR DELIVERY • MINIMUM OVERALL SIZE AND WEIGHT

## YOU'VE BEEN WAITING for THIS!



Pat. Applied For

Announces

# Riverside

## The "S" Clipper

### Over-and-Back-ONCE! — and You've Got a Perfect "S" Clip

And that's the main story except that it is a simple, sturdy machine that will last for years with practically no upkeep. An average operator can easily turn out 4 to 5 hundred clips per hour. You can't afford to be without it.

Better write for full information today

SHAKOPEE

**RIVERSIDE MACHINERY CO.**

MINNESOTA

## GOERGEN-MACKWIRTH Cyclone Separators



for collecting

**DIRT,  
DUST,  
SHAVINGS**

● If dirt, dust, shavings or other useless or harmful particles are created in your manufacturing process, a Goergen-Mackwirth Cyclone Separator will remove and segregate them efficiently and economically. The complete range of sizes available in Cyclone Separators makes it easy to select the exact size for your requirements. Special types and sizes can be designed for individual needs.

Goergen-Mackwirth Cyclone Separators require less horsepower for the fan operation because their offset outlet and clockwise rotation within the collector body greatly reduce the resistance loss through the collector. Their design eliminates the back-pressure found in ordinary separators.

*Ask to have one of our engineers survey your problem and submit recommendations. Or write telling us what you want to do and we will quote on the separator needed to do the job.*

**Goergen-Mackwirth**  
COMPANY, INC.

817 SYCAMORE STREET, BUFFALO 12, N. Y. Phone, Cleveland 6661  
SPECIALISTS IN THE MOVEMENT AND CONTROL OF AIR

may not consume all or any part of his remaining estate, should unforeseen contingencies arise.

We hope we have here presented the general idea of the importance of estate planning and that our readers will dig into the matter. It is our recommendation that the program be carefully worked out, under adequate professional supervision, and that the donor be absolutely sure of his position before taking any definite steps. Once done, it is quite difficult to correct errors. *Don't put off making those wills.*

### FHA Title VI Extension

A BILL WAS RECENTLY SIGNED by the President that increased the insurance authorization under Title VI of the National Housing Act to the sum of \$250 million dollars immediately with an additional \$500 million dollars available if it should be needed in the program of providing housing for veterans.

The use to which this new authorization will be put has been announced as directing major attention to the erection of rental housing. Moreover, commitments will not be issued to exceed the builder's capacity to complete construction during the term of the commitment and commitments will not be issued in excess of the estimated market absorption. It is estimated that the FHA will not be able to process the recent additional authorization before the expiration of the legislation by which Title VI operates.

Actually, of course, Title VI is only emergency legislation and has no effect on the far greater permanent insurance plan carried on under Title II.

## WHITNEY LEVER PUNCHES

No. 4B PUNCH



Length—8½ inches. Capacity—¼-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

No. 91 PUNCH



**CAPACITY**  
¼-inch hole through ¼-inch iron; ⅜-inch hole through ⅜-inch iron; 2-inch hole through ¼-inch iron. Depth throat, 5 inches. Weight, 82 lbs.

*We have tools for every purpose needed by Sheet Metal Contractors.*

*Ask your Jobber*

No. 1 PUNCH



Length—34 inches. Capacity—¼-inch hole through ¼-inch iron. Punches and dies in sizes from ⅛ to 9-16 by 64ths.

No. 2 PUNCH



Length—23 inches. Capacity—5-16-inch hole through ¼-inch iron. Punches and dies in sizes 3-32" to ½-inch by 64ths.

CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two punches interchangeable, including punches and dies. Capacity—¼-inch hole through ¼-inch iron.



**WHITNEY MFG. CO.**  
636 RACE ST. ROCKFORD, ILL.



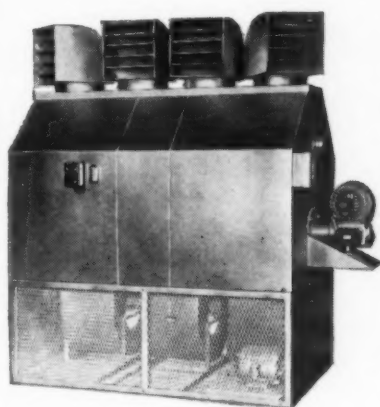
# NATIONAL CHAMPION

GAS AND OIL BURNING

— DIRECT FIRED —

## HEATER

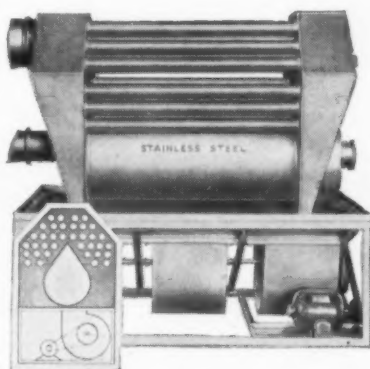
A HEAVY DUTY FORCED AIR UNIT  
FOR LARGE SPACE HEATING RE-  
QUIREMENTS



National Champion heaters are now available in full range of capacities and styles to insure proper selection for any size and type building. Industrial units as pictured are the proven method of heating factories, garages, and warehouses.

Special models, employing supply and return ducts, integral air filter assembly, and resilient mounted blower motors, are designed for churches, schools, and theaters.

View with casing removed illustrates the compactness and stability of heat exchanger and multiple blower section. Streamlined firebox of 'lifetime' Stainless Steel eliminates the inconvenience of refractory lining. Tear Drop design and full three pass convactor tube arrangement (as diagrammed) means complete, efficient air wipe of all heating surface at minimum resistance.



### GENERAL CAPACITY DATA

Model Number	B.T.U.	C.F.M.	H.P.	Dimensions (Inches)			Approximate Shipping Weight
				Length	Width	Height	
T.D.-25	250,000	3,600	3/4	60	32	81	1,300 Lbs.
T.D.-40	400,000	5,400	1	60	32	81	1,350 Lbs.
T.D.-50	500,000	6,600	1 1/2	80	32	81	1,780 Lbs.
T.D.-70	700,000	8,800	2	80	32	81	1,855 Lbs.
T.D.-80	800,000	10,200	2	80	48	81	2,110 Lbs.
T.D.-100	1,000,000	12,500	3	80	48	81	2,200 Lbs.
T.D.-125	1,250,000	15,300	5	100	54	96	3,000 Lbs.
T.D.-150	1,500,000	19,400	5	100	54	96	3,250 Lbs.

FOR COMPLETE INFORMATION WRITE

**NATIONAL HEATER COMPANY**

CLEORA & VANDALIA STREETS  
SAINT PAUL 4, MINNESOTA

## Furnace cleaning made easy!

General Electric Furnace and Boiler Cleaner

• gives you fast, thorough cleaning.



**T**HERE'S MORE PROFIT than ever before for you with the new General Electric Commercial Vacuum Cleaner!

The powerful suction action quickly removes soot and scale from furnace interiors. You can clean more furnaces per day —and more thoroughly than ever!

Light in weight, simply constructed. One man can operate it, with no previous training.

Backed by the General Electric Company warranty. Special tools and accessories are provided. For further details, mail coupon below. General Electric Company, Bridgeport 2, Conn.

**FAST • EFFICIENT • QUIET • ECONOMICAL**

*The New General Electric*

**Commercial Vacuum Cleaner**

**GENERAL  ELECTRIC**

A & M Department, Section 132, General Electric Company, Bridgeport 2, Conn.

Send descriptive literature concerning

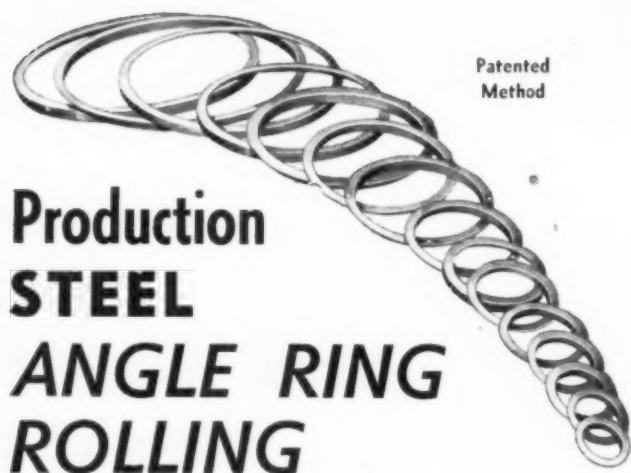
- ( ) Wet and Dry Pickup Vacuum Cleaner  
( ) Furnace and Boiler Cleaner

Name.....

Firm.....

Address.....

City..... State.....



Patented  
Method

## Production STEEL ANGLE RING ROLLING

*In Any Quantity*  
**6" to 36" I.D. Welded Butt Joint**

Over 35 years experience, highly skilled craftsmen, any precision equipment assure accurate rings for every purpose.

Also channels, tees, bars, rounds and shapes rolled to any radius to specifications.

## Immediate Delivery on SHEET METAL -- ANGLE FLANGES HEATING -- BLOW PIPE FITTINGS

- MONCRIEF FURNACES  
Coal - Oil - Gas
- INTERNATIONAL  
No. 85 - Oil - No. 150
- BLOWERS  
Viking - Brundage
- CONTROLS  
M-H. Sampsel - Perfex
- HUMIDIFIERS  
Viking - Skuttle Thermo Drip
- FIELD  
Barometric Dampers
- SHEET COPPER  
Cold and Soft Rolled
- LESLIE  
Slant and Vert. Louvers
- WESTERN  
Rotary Turbine Ventilators

*Write us TODAY! We ship everywhere in the U.S.A.  
Dealer's Net Price Sheet On Request.*

**CHICAGO METAL MFG. CO.**

3733 S. ROCKWELL ST.

Phone LAFayette 5754

CHICAGO 32, ILL.

**Fitch—**

(from page 80)

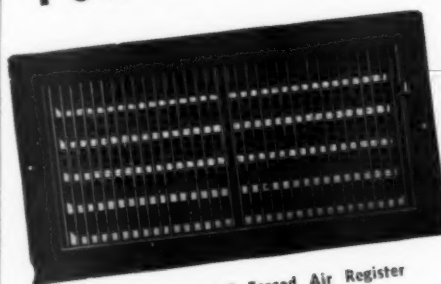
- (c) Erection of smoke pipes and warm air pipes.
- (d) Installation of return cold air ducts and pipes.
- (e) Installation of thermostatic control equipment.
- (f) Four meetings at offices, conducted by Corporation Officers to study Standard Code Application Manual as published by the National Warm Air Heating & Air Conditioning Association.

2nd—1000 hours, or approximately 6 months, Forced Air Units.

- (a) Assembly of Forced air units.
- (b) Assembly of blower units and connections.
- (c) Erection of plenum chambers, duct takeoffs and installation of volume control and zone control dampers.
- (d) Erection of Duct work and pipes. Warm air and cold air returns.
- (e) Installation of blower controls and operating limit controls.
- (f) Four meetings to study Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems.

3rd—1000 hours, or approximately 6 months, Oil Fired Equipment.

## AIR-VANE FORCED AIR REGISTERS



Made By  
**ROCK ISLAND**  
... You Know  
They're Good!

No. 802 AIR-VANE Forced Air Register

Quality of equipment is essential to the performance and life of any modern forced warm air heating installation. You'll find that Rock Island's AIR-VANE Line will fill the bill for you on the most exacting jobs. They're constructed with vertical or horizontal vanes for right or left or downward deflection of air flow. Multi louvre dampers for closing and 15 degrees downward directional air flow are standard. This versatile model is also available with single louvre in wall or baseboard registers. Check the complete Rock Island line . . . if it's a Rock Island Register you KNOW it's good.

**ROCK ISLAND REGISTER CO.**

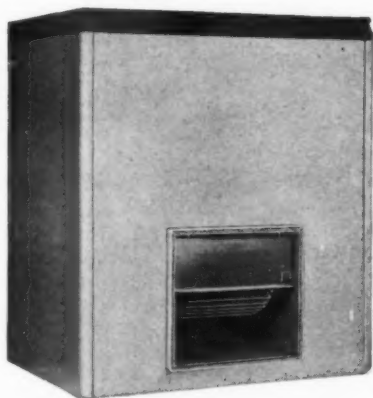
ROCK ISLAND, ILL.

2435 FIFTH AVENUE

# This Proven Friend of FUEL CONSERVATION Can Bring You Quick, Sure Profits NOW!

**REX**  
AIR-PAK

**BLOWER  
FILTER  
UNIT**



The EJR Series REX AIRPAK illustrated above embodies many improvements in design and construction that not only permit low-cost installation, but insure low operating costs and long, trouble-free service. Available in sizes for delivery of from 40,000 to 400,000 Register B. t. u. per hour, this series enables you to meet the requirements of any customer to his complete satisfaction. Write for Catalog No. 253 which gives detailed information.

Fuel shortages, either threatening or existent, have made thousands of furnace users keenly interested in equipment that helps to conserve gas, oil or coal. That's why your opportunity for profit with REX AIRPAK Blower Filter Units is now better than ever before.

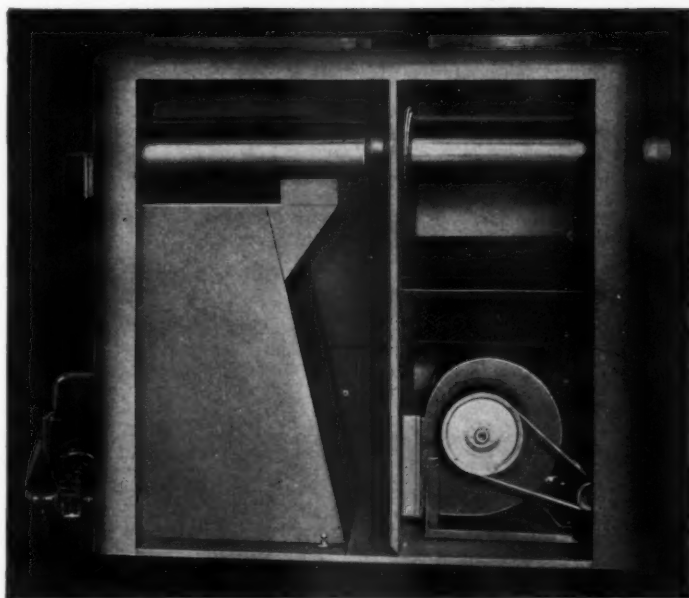
When you sell Winter Air Conditioning based on REX AIRPAK and the prospect's present furnace, you do not sell mere comfort through controlled circulation of heated, filtered and humidified air. You sell fuel conservation at the same time!

Feature this fact in your promotion and sales presentations and feature REX AIRPAK in the conversion jobs you handle. You'll find the going smoother than you ever thought possible.



2313 Superior Ave., Cleveland 14, Ohio

## Presenting the "SILENT"



275-gallon, 14-gauge fuel oil tanks  
available with units.

MANUFACTURED BY

**JACOB BRENNER CO.**  
FOND DU LAC WISCONSIN

STEEL-WELD  
*Oil Burning*

WINTER  
AIR CONDITIONER

A modern automatic heating plant for your most discriminating clients. Features keen beauty and smooth performance skilfully engineered to provide maximum comfort. The "Silent" is a real money-maker for aggressive dealers.

Please write for literature.



*we want*

## DEALER GOOD WILL

**Y**OUNGSTOWN pipe and fittings for both gravity and winter air conditioning are made with the dealer's installation problems in mind, and are made to those exacting specifications. They will "go in" with the least amount of installer's time and are tight under all conditions because of the care with which they are made.

**YOUNGSTOWN FITTINGS FIT!**

**YOUNGSTOWN FURNACE CO.**  
627 Marshall Street Youngstown, Ohio

- (a) Assembly of Oil burners and Oil Units.
- (b) Installation of Oil Tanks, outside fill lines, outside vent lines, oil gauges and oil filters.
- (c) Installation of all types of combustion chambers.
- (d) Erection of smoke stacks and regulation of drafts including CO<sub>2</sub> reading for combustion efficiency.
- (e) Installation of thermostat, safety stack control, limit control and timing checkup.
- (f) Four meetings to study Oil burner Safety Codes.

4th—1000 hours, or approximately 6 months, Gas Fired Equipment.

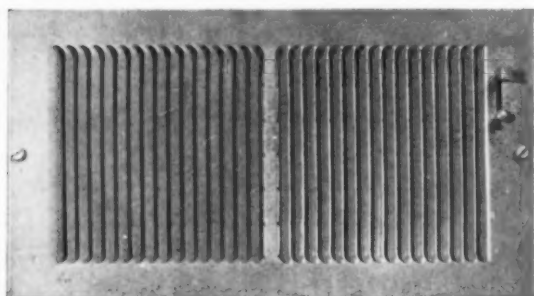
- (a) Assembly of Gas units and Conversion Burners.
- (b) Installation of all types of Gas Burner Equipment.
- (c) Inspection and installation of Safety pilots.
- (d) Erection of Gas Lines and pressure reducing valves.
- (e) Installation of automatic safety controls for Gas fired equipment.
- (f) Four meetings for the study of the Design of Winter Warm Air Conditioning systems.

5th—1000 hours, or approximately 6 months. Thermostatic Controls for Warm Air Heating.

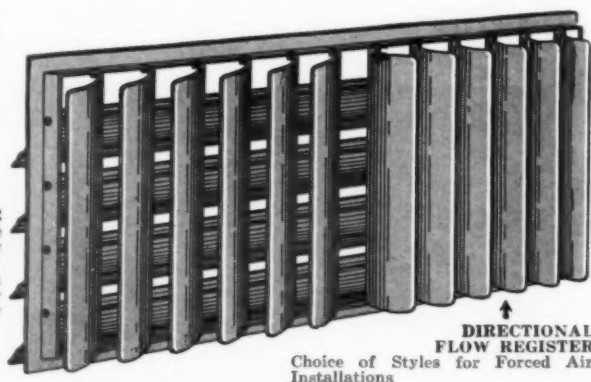
- (a) Thermostats for coal fired equipment.
- (b) Thermostatic controls for oil fired equipment.

## Sell PROFITABLE A-J Registers and Grilles

A-J offers you a complete line, designed right to please more customers, priced right to enable you to compete at a profit. Every A-J air outlet is sturdily constructed for longer wear, and superior operation, attractively styled to harmonize with any architectural design. For better customer service and greater profits sell A-J. Write today for free catalog.

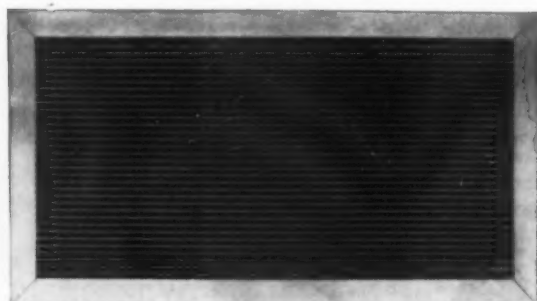


**AIR DIFFUSER**  
Single or Double Styles; Fully Adjustable; Louvers Held in Place by Our Tested Screw Feature.



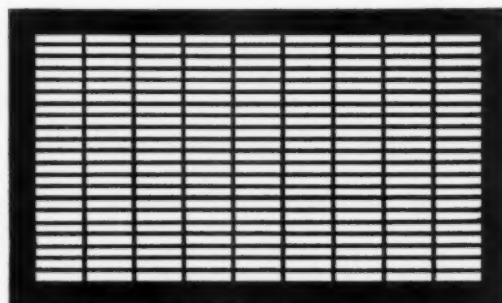
**DIRECTIONAL FLOW REGISTER**  
Choice of Styles for Forced Air Installations

**A-J MANUFACTURING COMPANY**  
2119 WASHINGTON ST. KANSAS CITY, MO.



**DOOR GRILLE**  
V-Bars Prevent See-Through; steel frames and aluminum cores for strength and lightness. For doors, walls or partitions.

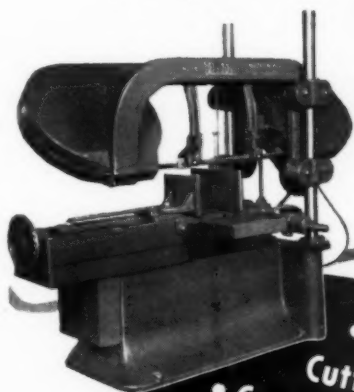
**STAMPED GRILLES**  
Available in Designs, Sizes and Finishes Suitable for Any Installation



... for metal cutting

*only the Wells  
No. 12*

**gives you  
all these  
features**

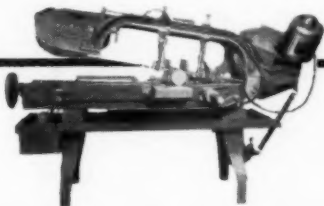


- Automatic Cutting Cycle
- Controlled Blade Pressure
- Horizontal Blade Travel
- Magnetic Controls
- Hydraulic Operation

The Wells No. 12 marks a revolutionary step in metal cutting. Place the stock in position, push the starting button and the head comes down automatically. The cut is made at a controlled blade pressure to any desired depth and the head returns to a raised position after completing each cut. Ask your Wells dealer for full details or write the factory.

#### TECHNICAL DATA

CUT-OFF CAPACITY:  
Rectangular..... 12" x 16"  
Rounds..... 12-3/4" O.D.  
DIE BLOCK CAPACITY:  
Maximum Cutting..... 12-3/4" deep; 16" wide  
Maximum Clearance, Bed to Blade..... 18"  
SPEEDS, Selective..... 50, 90, 150 ft. per min.  
MOTORS..... 1/3 H.P. & 3/4 H.P.  
WEIGHT, Approximate..... 1750 lbs.



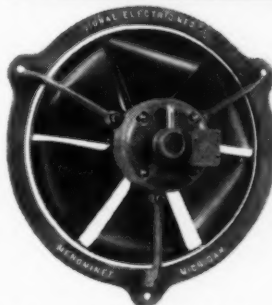
**The WELLS No. 8 with wet cutting system**  
This versatile saw is suitable for production or general utility work. It has a capacity of 8" x 16", rectangular, and 8" dia., rounds. The wet cutting system is an economical extra that speeds cutting and lengthens blade life.

**Wells**

*Products by Wells are Practical*  
**METAL CUTTING  
BAND SAWS**  
WELLS MANUFACTURING CORPORATION  
1610 WILSON AVE., THREE RIVERS, MICHIGAN

AMERICAN ARTISAN, March, 1948

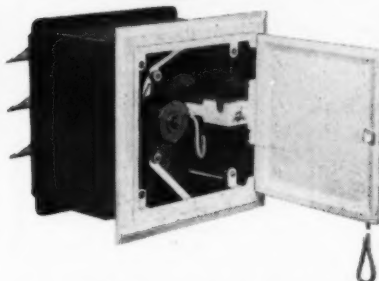
**SIGNAL**  
MANUFACTURERS OF ELECTRICAL PRODUCTS



**EXHAUST  
FANS**

For commercial use in kitchens, laundries, taverns, garages, and similar installations where a large volume of air is required, Signal Bucket Blade Exhaust fan does the job efficiently, quietly and economically.

**VENT  
FANS**



Kitchen Vent Fan  
Model V-50-A

Signal kitchen vent fans are two types adjustable—6-11 1/2" 13-24" ... 10" quiet type fan ... motor rubber mounted—totally enclosed ... double protection outside shutter; inside door ... can be installed in new or old houses.

**ELECTRIC  
DRILLS**



Model OB-4—  
1/4" Drill

Signal Electric Portable Drills in models for light and standard duty. In addition to drill illustrated, OB-8 1/4" drill for light duty and OB-5 1/2" drill for standard duty. This drill has everything you expect in a good drill ... power, proper speed, correct balance, high quality construction. Ask for drill catalog and price information.

**SIGNAL  
ELECTRIC MFG. CO.  
MENOMINEE, MICHIGAN**

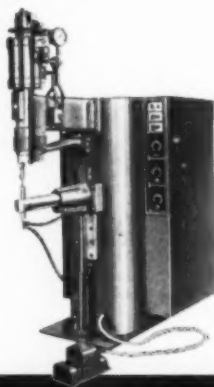
# Whether you make Whippers...



... or pots and pans, or trucks, or stoves, or any product fabricated of metal... you'll be interested in the story of Mr. Widget. He was faced with the dilemma of wanting to use resistance welding but not having sufficient plant transformer and distribution facilities to handle the extra load. Also the power people frowned on the addition of a *low power factor* load.

How Mr. Widget became a "Man of Success" with the aid of "THREE PHASE" is briefly told in the booklet; "How Mr. Widget Made More Whippers." Your copy is waiting—just drop us a post card. You'll find it well worth the 3 minutes reading time (not counting technical stuff.)

→  
This is a Sciaky "THREE-PHASE" Spotwelder. It's a self-contained unit that delivers the same welding capacity on 1/2 the KVA demand—draws a balanced three-phase load at near unity power factor. Big and little machines are available for every requirement. Write for details.



## SCI AKY

Manufacturers of a complete line of resistance welders  
Offices in New York, Detroit and Dayton  
Representatives in Principal Cities

SCI AKY BROS., Inc., 4907 W. 67th St., Chicago 38, Ill.

- (c) Thermostatic controls for gas fired equipment.
  - (d) Minneapolis-Honeywell Moduflo controls for residence installation.
  - (e) Minneapolis-Honeywell Moduflo Zone controls.
  - (f) Four Meetings for the study of Thermostatic control equipment.
- 6th—1000 hours or approximately 6 months. Service and Repair of Heating equipment.
- (a) Reason for failure of equipment to perform.
  - (b) Inspection of all safety controls.
  - (c) Repair and adjustment of all equipment.
  - (d) Four meetings for the study of Service work.

### Markstein—

(From page 82)

or how to mend broken china. "Sure, answering these questions took plenty of my time," he relates, "but it paid off. People came back when they wanted to buy. They came back because I had become a friend, a guy they liked, one who gave his time to help them."

There are many ways in which you can personalize your advertising. One Southwestern company did it by running at the top of each ad "comments" on the state of the world, the cost of living, and other topics in the news. These miniature editorials were signed by the owner of the company. They helped to build a distinct personality for him (and, in the process, for his business). If you would like to run personalized advertisements like this, however, you must be careful.

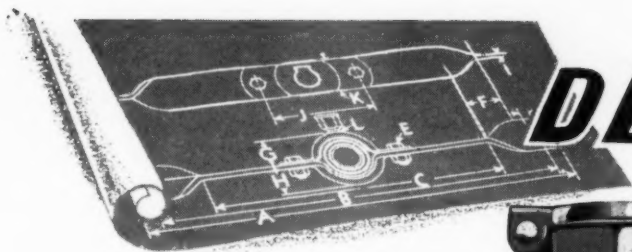
**WHITNEY-JENSEN PRODUCTS**  
38 YEARS EXPERIENCE

## WRITE FOR NEW CATALOG 16-48

Showing numerous time  
and labor-saving tools  
and machines.

**WHITNEY METAL TOOL COMPANY**  
91 FORBES ST. • ROCKFORD, ILL.





# DESIGNED for Air Conditioning

This shock-absorbing pillow block was designed by air conditioning engineers for fans, blowers and other devices requiring **silent operation, perfect alignment, self-lubrication, and minimum obstruction to air flow.** No other bearing provides all of these advantages.



Shown here is one of several types of mountings. We are glad to cooperate with engineers in designing mountings to meet their specific needs. Tell us your problems and we will send other types of mountings, specifications and complete information.

**TRIANGLE MANUFACTURING CO.**  
392 Division St. Oshkosh, Wis.

## Now Available . . .

A complete reprint, under one cover, of Professor S. Konzo's invaluable series of articles —

### The "HOW, WHAT AND WHY" of the new

## WINTER AIR CONDITIONING MANUAL

Everyone who is now using or expects to use the new "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" will find Professor Konzo's series a source of much practical help in understanding the Code and correctly applying it to actual jobs. In this great series, Professor Konzo not only explains step by step exactly how to use the Code, but, in addition, tells in detail of the research and experience that is behind each step in the suggested procedures.

**Price — Only \$1.00 per copy**

**AMERICAN ARTISAN**

6 NORTH MICHIGAN AVE.

CHICAGO 2, ILLINOIS

## The Heated Air Takes a Bath in the . . . *Zephyr.*



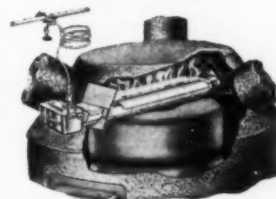
Yes, Mr. Dealer, you can really "go to town" selling this Maid-O'-Mist Automatic Zephyr.

It's priced **RIGHT**—and has sales features galore!

Patented wing deflectors speed up evaporation and give extra large capacity. Bronze, corrosive-resisting construction insures years of service.

Start today on the road to **EXTRA PROFITS** by writing us for complete data on Maid-O'-Mist lines, or see your jobber.

### OUTSTANDING AUTOMATIC HUMIDIFIER



Showing completed installation of a "ZEPHYR" Bronze Humidifier in a sloping plenum furnace.

**MAID-O'-MIST INC.**

3213 N. PULASKI RD.  
CHICAGO 41, ILLINOIS





**YOUR PROBLEM** — To find a vent pipe for your gas appliances that is efficient, safe, durable and easy to install.

**THE SOLUTION** — METALBESTOS, the scientifically engineered gas vent and flue pipe designed to meet ALL the venting requirements of modern gas appliances.



**EFFICIENT** — The all-metal pipe-within-a-pipe construction assures a hot stack the entire length of the run. Hot gases cannot cool as they rise and are exhausted with maximum efficiency. Even from a cold start, dripping of condensed gases is eliminated.



**SAFE** — The air space between the inner and outer pipes eliminates the fire hazard by providing the most effective insulation available. Leakproof joints prevent the escape of dangerous gases injurious to life, health and property.



**DURABLE** — Sturdy double pipe design provides extra rigidity. The inner pipe is virtually immune to high temperatures and the acids produced by condensation. The outer pipe is weather resistant in any climate.

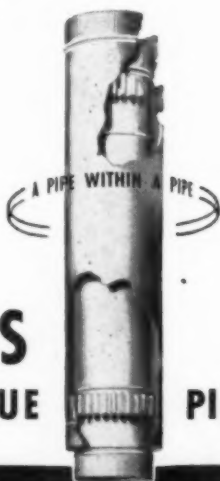


**EASY TO INSTALL** — Lightweight, unbreakable construction makes METALBESTOS easy to handle and install even in the largest 10 ft. lengths. Convenient sizes and lengths, a complete line of fittings and standard brackets guarantees a simple, permanent, trouble-free installation.

For the complete story  
Write **TODAY** for our  
**NEW CATALOG**

**WILLIAMS-WALLACE CO.**  
160 Hooper Street  
San Francisco 7, Calif.

**METALBESTOS**  
**GAS VENT AND FLUE PIPE**



**YOU GET ONLY THE BEST WITH METALBESTOS**

## Heart Rules Wallet

There are two pitfalls. One is panning people, ideas and things. When you pan, you may be risking a libel lawsuit. The other pitfall is the possibility of offending potential customers. If you discuss topics of the day, a strong stand on one side or the other of any given question is bound to earn enemies for you rather than friends. Sticking to the middle, you can be sure no one will take offense.

Going out of your way to make friends in these ways can pay off in heavy measure. For nine times out of ten, it is the dealer he *likes* to whom Mr. Customer goes. Our emotions govern most of our buying actions. And the man his emotions tell him is a friend is the one to whom Mr. Customer will go every time.

## Marsalis—

(from page 100)

flushed clean of dirt, in addition to proving positive air cooling when climatic conditions are favorable.

Bear in mind the following:

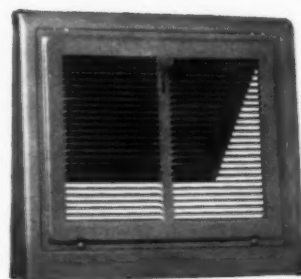
1. Even in mid-ocean, climatic periods exist during which temperature may be lowered by evaporation.
2. In a well engineered Evaporative Air Conditioner, the amount of moisture added to the air is so small as to defy measurement, except with precision laboratory instruments.

**NEW STANDFORD**  
PERFORATION OF ALL METALS  
**GRAVITY BASEBOARD REGISTERS**

**NOW IN PRODUCTION**

**QUICK  
DELIVERY!**

2-Piece Construction  
with Removable  
Face of "BEND-  
EZY" Design. Me-  
tallie Finish.



**FORCED AIR  
REGISTERS**  
Immediate Delivery  
on All Standard Sizes

### SPECIFICATIONS:

Duct Size	Base Ext.
10" x 8"	2 1/4"
12" x 8"	2 1/4"
12" x 9"	3 1/4"

**PERFORATED METALS FOR EVERY  
INDUSTRIAL USE**

[ We also manufacture the MIRRO-  
GLO LINE of Bathroom Medicine  
Cabinets. ]

**WRITE FOR  
COMPLETE  
INFORMATION,  
PRICE LIST.**

**STANDARD** STAMPING &  
PERFORATING CO.  
3137 W 49th PLACE CHICAGO, ILLINOIS

## EASY EXTRA PROFITS on every Automatic-Heat installation

*Lowest Cost*  
**HOME INCINERATION**  
available!

Low cost and "self-burning" action bring quick sales for this easy-to-install incinerator—especially where automatic heating prevents rubbish-burning in the furnace! Burns wet or dry garbage and rubbish; advanced down-draft action dries the waste constantly. Contents need be ignited only once or twice a week; ashes removed only once or twice per month. Unit is only 2 feet in diameter, less than 3 feet high! Uses any 8-inch flue; will not affect heating-plant efficiency if tapped to furnace flue. Handsome silver-and-blue duotone finish! Write for details!

**The Majestic Co.**  
842 Erie Street  
HUNTINGTON, INDIANA

**Majestic**  
No. 30 FUELLESS  
HOME  
INCINERATOR



FUEL-FREE

FUME-FREE

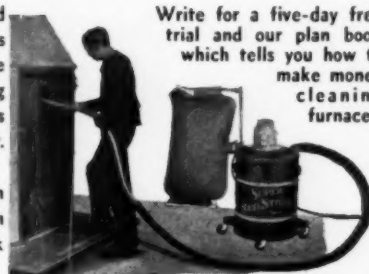
FUSS-FREE

*Nationally Advertised Home Necessities for Over 40 Years.*

## Get Organized Now for The Busiest Spring Yet

● This Winter's record cold weather has produced more than the usual number of heating plants and chimneys clogged with soot and dirt.

● You can clean them with less labor and in less time the Red Streak way.



Write for a five-day free trial and our plan book which tells you how to make money cleaning furnaces.

Furnace cleaning is something you can always sell at a good profit to yourself and your customers. And further, it uncovers the need for repairs, replacements and new plants which home owners will buy without resistance. You can get immediate delivery of a Super Red Streak and give immediate delivery of Cleaning Service.

**National Super Service Company, Inc.**  
1944 N. 13th St. Toledo 2, Ohio

**National Super Service Company of Canada**  
Toronto, Ont. Vancouver, B. C.



## To Your SPECIFICATIONS

All sizes—accurately rolled to any diameter—complete circles or any part thereof—made in every dimension, furnished with or without bolt or rivet holes.

You'll appreciate this when you back them up or fit them on the job.

Used for reinforcing tanks, joining pipe or smoke stacks, installing air conditioning fans, and thousands of other uses.

"FABRICATING to customers' specifications and prints" has enabled us to accumulate a large stock of punches and dies for piercing, blanking, notching and forming—available to you. Send us your fabricating requirements.

Write for our circular illustrating the scope of our service.

**NATIONAL METAL FABRICATORS**  
2136 S. SAWYER AVE. CHICAGO 23, ILL.

## PERFORMANCE PLUS!

**ATH-A-NOR**

*Furnaces and Parts*



Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

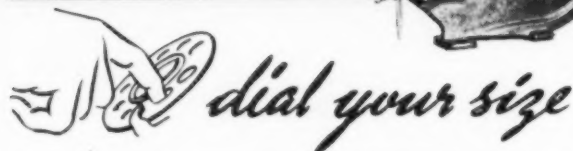
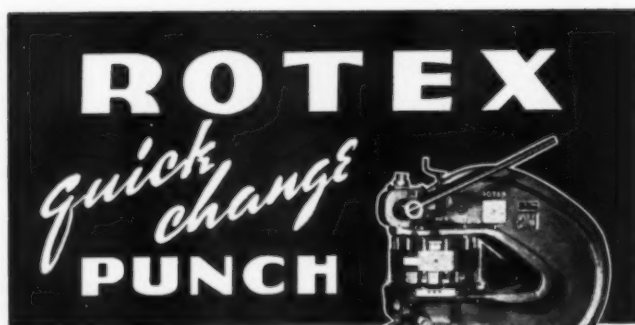
**MAY-FIEBEGER COMPANY**

*Manufacturers of Quality Heating Equipment  
for Over Fifty Years.*

Newark

Ohio





That's right! Just turn the revolving turret head of ROTEX 18 to the size punch you need . . . 17 punches. 5/32" to 2", and 2" nibbling shears. Capacities, 10-12 gauge. Ready for action!

With ROTEX 18 you eliminate faulty step-up, punch-change delays, many operating accidents, extra cutting and filing operations. You turn out cleaner jobs faster, at increased profits.

ROTEX punches are lowering costs in hundreds of small shops as well as in the giant plants of Fisher Body, Lockheed Aircraft, General Electric and other nationally known firms and railways. Why not put ROTEX on the job in your sheet metal working, too!

Some dealer territories available!  
Send for DESCRIPTIVE FOLDERS



**PUNCH COMPANY**  
4726 East 12th Street  
OAKLAND 1, CALIFORNIA

3. As a consequence of the foregoing, the user has a high class "Input" night cooling fan, plus self-cleaning filter, also positive reduction of air temperature, night or day, when climatic conditions are favorable.

Since original cost, installation expense, and operating cost are little more than ordinary window fans, truly a new field with tremendous potential profits has been opened for wide-awake dealers.

"Evaporative Air Conditioning"—Reprint of an American Artisan series by Martin E. Marsalis is available from the author, Box 7037, Sylvania Station, Fort Worth, Texas. (Twenty-five cents.)

Phillips—

(from page 98)

umes of air than is customary. Duct layouts also may be simplified because these efficient air-diffusers—when properly selected and located—*thoroughly* distribute the air in spite of machines, columns, and other obstacles. Small ducts and simplified layouts enable the contractor to save valuable space and reduce installation costs in spite of the cost of these air-diffusers.

The versatility of this device is demonstrated by the fact that nearly 1,000,000 Anemostats are now successfully operating in heating, ventilating, air-conditioning and refrigeration systems of all kinds.

Air distribution does *not* end at a duct opening. Here, in fact, is where scientific air-distribution begins—the *air-distribution that makes or breaks air-conditioning*. And with proper application of air diffusers, contractors have converted Draft Complaints into Comfort Compliments on existing installations . . . and avoided costly servicing on new systems.

## Now Only \$2.00 for This Outstanding Book on Air Conditioning

The Third Edition of

### AIR CONDITIONING FOR COMFORT

by SAMUEL R. LEWIS

288 Pages—6½" x 9¼"—Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known AIR CONDITIONING FOR COMFORT.

Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

Send \$2.00 for a copy today to the address below. We know you will consider this one of the finest air conditioning books you have yet seen, but if you should be dissatisfied with it for any reason whatever, your money will be promptly returned to you.

## KEENEY PUBLISHING COMPANY

6 No. Michigan Avenue

Chicago 2, Illinois

## It's Here...The New Low Cost **CHILL-AIR** Recirculating High Quality Pump



Here's a big profit maker at minimum cost! Designed for Evaporative Coolers, Coolants for lathes and machine tools, Fountains, Displays and all light industrial pump uses.

The heavy duty totally enclosed motor, with moisture proof vacuum-impregnated field coils, has a stainless steel shaft; large, easy oiling, permanent alignment oilite bearings that require only one oiling during the cooling season. Cast brass pump bracket and impeller housing (die stamped brass impeller).

This "quiet" large capacity pump consumes only 60% of motor capacity under full load. It's trouble-free and has no equal in excessive humidity applications.

### GUARANTEED FOR ONE YEAR

Distributors: Few choice territories open. Write for details.

Dealers: Order sample from manufacturer now. A Chill-Air Distributor in your territory will serve you.

Manufactured by  
**NATIONAL ENGINEERING & MANUFACTURING CO.**  
523 Wyandotte Kansas City, Mo.

## MAPLEWOOD HUSKY-LITE COMBINATION MACHINE

20 Gauge Capacity - Immediate Delivery



A HUSKY—LIGHT WEIGHT ALL-PURPOSE MACHINE, made from SPECIAL ALUMINUM ALLOY. Weight (less standard) 15 lbs. Equipped with steel cut gears. Steel rolls (2" long) are machined, hardened, ground and keyed to fit shafts.

A large interchangeable gauge (3¼"x 2½") and handles for either top or bottom shafts permits clockwise or counter-clockwise operation.

BURRING  
TURNING  
WIRING  
SINGLE BEADING  
O. C. BEAD ROLLS  
EDGE STRAIGHTENING  
STRETCHING  
CRIMPING  
COMBINATION CRIMPING  
AND SINGLE BEADING

### SEE US FOR—

Pittsburgh Lock Machines, Roll Forming Machines, Roller Dies, Pipe and Elbow, Beading, Turning Machines and all other Sheet Metal Working Machinery.—Your inquiries invited.

**MAPLEWOOD MACHINERY CO.**  
2634 FULLERTON AVE. CHICAGO, ILL.



## New! **HEXDALL DUCT HANGERS**

U. S. Patent No. 2264666

Hang ducts like "greased lightning"... make more money on each job... save up to 92% on labor with these sensational new cadmium-plated duct hangers. No special tools. You minimize strain on your men, reduce accidents. No lost or worn-out tools. Eliminate strip steel, nails, screws, bolts, rivets, or wire... handle all types of duct material, including aluminum. Get free samples and free folder—write us today, including name of your favorite jobber!

**A. M. HEXDALL CO.**  
MORRIS, ILLINOIS  
Manufacturers of Sheet Metal Specialties.

JOBBER AND SALES AGENTS... This new development is the sales sensation of the sheet metal industry. Write for information about territories available, literature, samples, and prices.

## HOMER

FURNACE & FOUNDRY CORPORATION

### MANUFACTURERS OF FURNACE AND BOILER REPAIR PARTS



Attractive prices to volume buyers PLUS free delivery by Homer's own fleet of fast trucks.

FOR CATALOG AND COMPLETE INFORMATION, WRITE, WIRE OR PHONE . . .



**HOMER FURNACE & FOUNDRY CORP.**  
COLDWATER, MICHIGAN

**SUBSTANTIAL  
PROFITS  
for YOU—  
Cleaning Furnaces  
with the  
GRAND RAPIDS  
De Luxe  
FURNACE  
CLEANER**



You can put furnace cleaning on a money making basis by using a Grand Rapids Furnace Cleaner. High velocity suction scoops up all deposits of soot, ashes and carbon, cleaning the heating plant and re-establishing full efficiency. Special attachments clean flues, radiators, right angle turns and other hard-to-reach areas. The job is done quickly and completely. Customers are highly satisfied.



The Grand Rapids De Luxe Furnace Cleaner is also your "in" for more than cleaning profits. By checking over and inspecting the heating plant as you clean it you are in a position to make timely recommendations for new equipment or repairs. This means better service for customers . . . more profits for you.

*Write for complete  
information and prices today.*

**DOYLE VACUUM CLEANER CO.**

227 Stevens St., S.W.

Grand Rapids 7, Michigan



**E-Z-ON  
DAMPER  
REGULATORS  
Silence These Three  
Noise Makers**

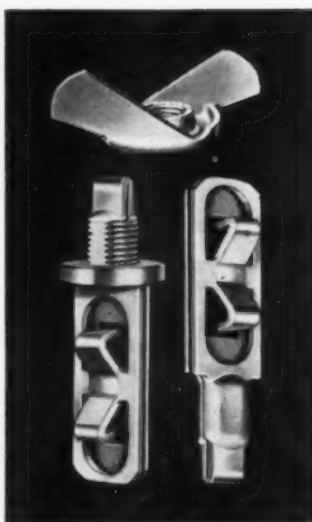
Mechanical heating, ventilating or air-conditioning systems are improved by E-Z-ON Damper Controls. Fast installation saves you time and money; satisfactory performance keeps your customers happy.

*Buy through your jobber.*

**M. A. GERETT CORP.**

MILWAUKEE 5, WISCONSIN

Stocked in Canada by Thermidare Corp., Long Branch, Toronto 14.



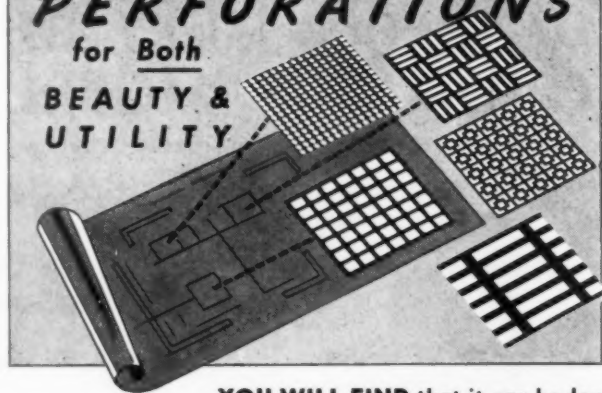
**Zideck—**

*(from page 124)*

product not standard or furnished to dimensions. In many cases the part is wanted at once, to go into an installation or to replace an old part immediately. In these cases the shopmen must themselves produce the part; and as it is in nine cases out of ten a job requiring at least a partial employment of these small turning-beading machines, the study of same, the knowledge of same, of the diverse male-female discs that can be used, by interchange, in accomplishing certain work, undoubtedly benefits any man working in sheet metal. There are dozens of effects obtainable with these discs, properly aligned and manipulated, and it pays the sheet metal worker to experiment with the alignments and the results of operating the machines with differently mated discs, as it is possible to do practically any of the upturns, in-turns, out-turns, metal-edge doubling, beading for ornamental and reinforcing purposes, and various other metal formations, for seaming and preparation of the edge for receiving and holding the component sections together, either permanently, or just enough to secure the parts by soldering or brazing.

In the fabrication of metal cabinets or lighter household utensils, where certain ornamentation is in place, beaded strips may be formed to go over the otherwise unseemly joints, riveted or welded; the strips attached by snaps through the metal or by any other current practices, as in vogue especially on paint-finished products. Such ornamental strips can be obtained from factories, yes; but sometimes we need something of

**PERFORATIONS  
for Both  
BEAUTY &  
UTILITY**



in  
**METAL  
PLASTICS  
PLYWOOD  
FABRIKIDS  
and other  
materials**

**YOU WILL FIND** that it can be done when you consult H & K on your perforating problems. With a wide selection of sizes, shapes and spacings in practically any sheet material, you get the benefit of H & K's 65 years of valuable experience. In planning your design—functional or decorative—write H & K for full information.

*H & K "Make Your Own" Safety Guards . . . strong, safe, inexpensive. Ask about them!*

**The  
Harrington & King  
PERFORATING Co.**

5649 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.



## UNIVERSAL VENTILATING SYSTEM

*Cooling Assures* COOL  
REFRESHING COMFORT

**GREATER DEALER PROFITS**



MODEL 18-F

Universal Coolers are built for easy installation — years of trouble-free operation.

Maximum cooling efficiency assured. By turning off the water to the cooler on humid days, cooler becomes a very efficient ventilating system.

DEALERS—  
ORDER ONE TODAY  
PROFITS WILL START  
IMMEDIATELY

DISTRIBUTORS—  
CHOICE TERRITORIES  
OPEN NOW  
WRITE FOR DETAILS



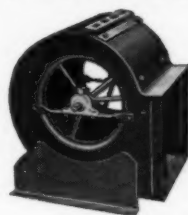
AIR CONDITIONING CO.

1719 SO. CENTRAL AVE., PHOENIX, ARIZONA

## • BLOWERS •

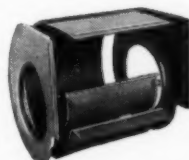
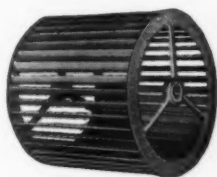
for

**Air Conditioning Furnace Manufacturers**



The New Bishop & Babcock  
Air Conditioning  
Blower Assembly  
Type "AC"—Design 2

The New Bishop & Babcock  
Blower Wheel  
For Air Conditioning  
Furnace Blowers



The New Bishop & Babcock  
All Stamped  
Housing Assembly  
and Component Parts

Write for Bulletin No. 115

MASSACHUSETTS BLOWER DIVISION

**The BISHOP & BABCOCK Mfg. Co.**

4901 HAMILTON AVENUE

CLEVELAND 14, OHIO

Speed Up Orders With a

## BEVERLY SHEAR

Throatless shears  
that cut any shape  
. . . straight, cir-  
cular or irregular.  
**FASTER** — accu-  
racy! Order No. 1



for 14 gauge. No. 2 for 10 gauge.  
No. 3 for 3/16 inch mild steel and  
10 gauge stainless. Available with or  
without stand.

**BEVERLY SHEAR MFG. CO.**

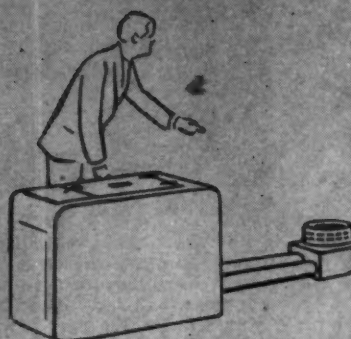
3001 W. 110th Place Chicago 43, Ill.



## ECON-O-COL

*The "Stronghearted" Stoker*

BUILT BY COTTA TRANSMISSION  
COMPANY • ROCKFORD, ILLINOIS



## NEED REPAIRS *Quickly?* TRY DES MOINES

**H**ERE at Des Moines Stove Repair we're set up to supply you with the best repair parts in the fastest possible time. We know what delayed orders mean to you in wasted time and money, so we fill the smallest order or the largest promptly.

We'd like to point out now that there's a good field awaiting the aggressive heating man in converting oil-fired heating plants to coal. We can supply the parts you'll need for these conversions and we'll get 'em to you without delay. Better investigate the prospects in your territory.

Anything you need for that spring repair work—filters, parts, furnace cement, registers, etc.—is available quickly and easily from Des Moines Stove Repair Co.

Write us today!

### DES MOINES STOVE REPAIR COMPANY

DES MOINES, IOWA  
SINCE 1869

## AIR-FLO A-555 MODEL AUTOMATIC SHUTTER WEATHER-SEALED

*leads the  
field in  
features!*



FRONT VIEW--CLOSED

There is every reason why you should use AIR-FLO shutters on your jobs. New heavy reinforcement strip adds strength and long life to the louvers, assures quiet operation and perfect counterbalance, prevents rattling. Aluminum louvers open fully, permitting capacity fan operation. Deep shroud protects shutter from high winds. Tie-rod, brackets and bearings inside frame, not exposed to weather. Special finish resists corrosion. Many other features. Write for illustrated catalog 42-C of the complete AIR-FLO line.

### AIR CONDITIONING PRODUCTS CO.

2340 W. LAFAYETTE BLVD.

DETROIT 16, MICH.

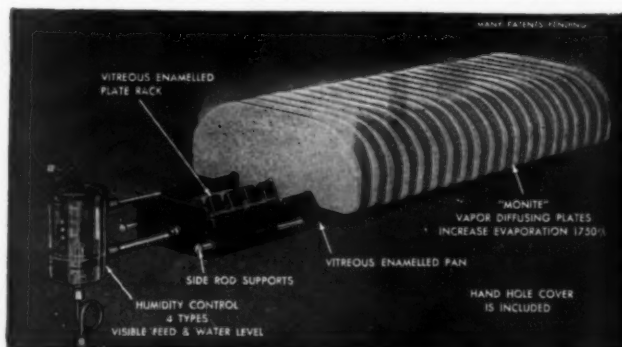
the sort in a hurry; and we can make a fairly presentable product by forming it in the turning-beading machine. There are numbers of uses for the formative discs, principally in products of curved shapes, which permit of full impressions of the pattern without buckling the metal (as might happen if we process flat sheets through the discs).

The machines are familiar to any shopman, and their manipulation needs no elaboration, except as contained in this article in respect to the uses of the various discs and the precautions which it is prudent to observe in the "impressing" work. Deep impressing should be done by stages, even if it would seem time-wasting. The smooth, uniform impressions obtained compensate amply for the time required to run the metal twice or thrice through the slowly tightening discs.

### Canadian Excise Tax Lifted

THE CANADIAN GOVERNMENT had placed an Excise Tax of 25 per cent on forced warm air heating equipment in Canada on the basis that it made use of air filters and thus came under the "air conditioning" classification. This levy was part of the Canadian campaign to cut off imports from the U.S. as another factor in the imposition of the tax was the "U.S.A. content" of the equipment.

A storm of protest arose from manufacturers of heating equipment in that country along with a promise to further reduce the American content of their products and the Excise Tax was lifted, retroactively to its date of imposition—Nov. 18, 1947.



## MONMOUTH HUMIDIFIERS

There are many humidifiers for warm air systems on the market. Some of them sell for next to nothing. But unless such an automatic device gives high efficiency and continuous dependable service—ANY amount of money is simply thrown away on it. Experience has shown heating dealers that with a Monmouth Flotrol or a Micro-Feed, both very profitable items for you in the first place, this profit is NOT eaten up by service calls. Designed on engineering principles which are unequaled, accurately built of the finest materials, Monmouth is strictly a precision product, yet costs little more than makeshift devices. Use genuine Monmouths on your jobs—they save everybody money in the end. We also make gas-fired Humidity Conditioners for all radiator systems. Details and prices on request.

### THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Avenue Cleveland 3, Ohio

# WISCONSIN FURNACE CO.

27 N. CHARTER ST. — MADISON 5, WISCONSIN

CHARLES W. VAUGHN  
GEN. MGR.

TELEPHONE  
GIFFORD 6622

**EVERYTHING FOR WARM AIR HEATING**

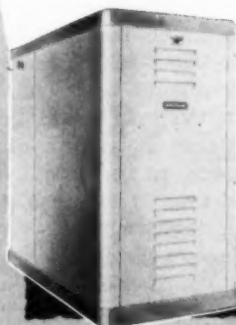
Distributors of  
**ARMSTRONG FURNACES**  
COAL • OIL • GAS

**BETTENDORF OIL BURNERS**

**VIKING Blowers • BRUNDAGE Blowers**  
**MINNEAPOLIS HONEYWELL CONTROLS**  
**U. S. REGISTERS • REYNOLDS ALUMINUM**

COMPLETE LINE OF  
GALVANIZED FITTINGS

Hot Water Heaters, Stokers,  
Asbestos Products, Sheet  
Metal Tools, Research Air  
Filters — all your needs  
for warm air heating  
installations.



**97% of Orders Shipped  
SAME DAY Received**

*There's Profit  
in the Air*

with

**UTILITY**

**AIR COOLERS**

**More Business, More Profit than Ever  
Before with UTILITY'S 1948 Line**

**11 Models—1150 to 12,000 CFM**

Big new sales opportunities . . . Bigger value than ever . . . Smoother, quieter, even more efficient operation . . . Lower installation, operating and maintenance costs . . . Longer life . . . Less servicing. These are some of the features of Utility's 1948 line of Evaporative Air Coolers that mean more installations, more profit per job, highly pleased customers. Extra set of filter pads free with each Cooler — gives you a premium for prospects. Big new Dealer Manual helps you sell and install.

You  
Sell



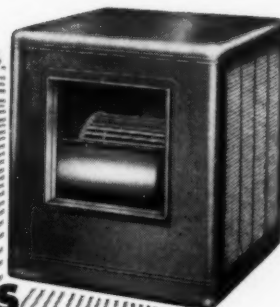
*Guaranteed Air Delivery* is a big sales feature that you get only with the Utility line of evaporative air coolers. Utility guarantees each model to deliver its rated C.F.M.—and backs up ratings with tests based on ASHVE codes. *Guaranteed Air Delivery* means **GUARANTEED COMFORT** — a powerful sales argument for you that means *quicker sales, more sales.*

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**UTILITY APPLIANCE CORP.**

4851 S. Alameda St., Los Angeles 11, Calif.

DIVISIONS: Gaffers & Sattler • Occidental Stove Co.



FOR THAT PERFECT

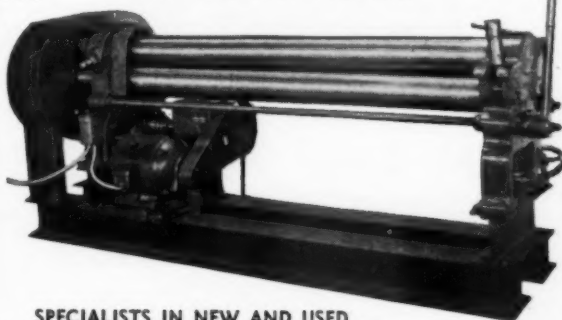
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IN SHEET METAL

THE NEW 6" DIAL

**MILTON**  
SLIP ROLL FORMING MACHINE

Rolls Manufactured 1" to 6" in diameter . . .  
to 10' length. Handles up to 1/4" capacity.  
Hand or Motor Driven Models

**IMMEDIATE DELIVERY**



SPECIALISTS IN NEW AND USED  
SHEET METAL WORKING MACHINERY

**MILTON EQUIPMENT CO.**

402 Race St.

Phila. 6, Pa.

WAlnut 2-1734

**Does Every Cutting Job**

**BETTER . . .**

**EASIER . . .**

**QUICKER . . .**

No matter what type of cutting—either irregular shapes or straight splitting—from ANY width sheet, you'll quickly find that the Marshalltown Throatless Shear is the most profitable tool in the shop.

Furnished in hand operated or motorized models.

*Get Special Shear Bulletin Today. Gives details of sizes from 18 gauge to one-quarter inch capacity.*

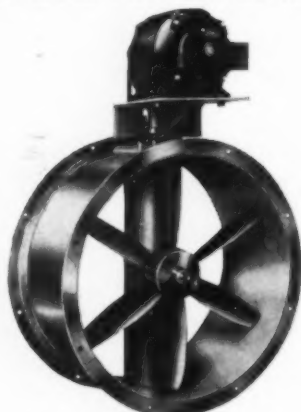


**MARSHALLTOWN MFG. COMPANY**

920 E. Nevada Street, Marshalltown, Iowa



## "DANA" DELUXE SPRAY BOOTH FANS



**Immediate Delivery!**

Complete Line of Sizes from 12" to 42"  
With or without Motors

The ultimate in positive elimination of fumes and vapors in paint spray booths and other hazardous locations.

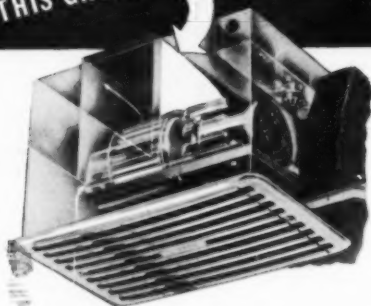
Write for Descriptive Literature  
and Prices

**THE DANA FAN & BLOWER CORP.**  
(Formerly Geo. B. Klee Co.)

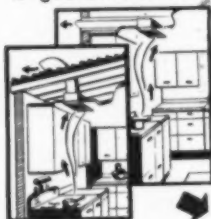
3501-27 Colerain Ave.

Cincinnati, 23, Ohio

**Only THE CLIPPER  
HAS THIS GREASE  
PARTITION!**



Hundreds of pounds of grease and dust suspended in the air as mist pass through a kitchen ventilator during its operating life but only the Clipper moves this harmlessly outdoors without gumming or wearing the motor. The Clipper is guaranteed for 5 years because the motor is entirely removed from the air stream. It's easy to install in old or new houses. Mounts in the ceiling between joists with only the dripless ceiling grille visible.



Sketches show how easily Clipper is installed between joists and vented through roof or a side wall.

**MAIL THIS COUPON TODAY**

Trade-Wind Motorfans, Inc.  
5703 S. Main St., Los Angeles 37, Calif.  
Send complete information on the Clipper.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

## Neubrech—

(from page 89)

walls. When wood is dried, the free water is the first to leave and the point where all the free water has been dried out and the cell walls start to dry is known as the "fiber-saturation point." This is a critical point in the drying of wood as it is at this time that wood starts to shrink.

## Why Wood Is Dried

The principal object of drying wood is to bring it to a point of equilibrium with moisture conditions of the air (relative humidity) under which it will be used. Wood, when dried below the fiber-saturation point, has a property known as *hygroscopicity*. This property causes wood to "pick up" or "give off" moisture from the air according to the percentage of relative humidity in the air. Wood shrinks when it loses water or swells when it takes on water, when below the fiber-saturation point. The fiber-saturation point is reached in most species of wood when it is dried down to around a 20 or 25 per cent moisture content and as all lumber used for indoor purposes must be considerably below that point, it is subject to change in dimensions due to hygroscopic action. For example, wood for a chair is usually dried to a 5 per cent moisture content, but it will usually pick up moisture to the extent of 6 or possibly 7 per cent by the time it is completely manufactured and reaches our home, which is about the "mean" between the extremes of moisture content it may reach in use. In the winter, with "dry" heat in a building, the wood in this chair may dry down



## PENN-AIRE FURNACES GRAVITY, CAST IRON

Popular Price      Practical Design  
Economical Operation

**UNION MANUFACTURING CO., INC.**  
BOYERTOWN, PA.

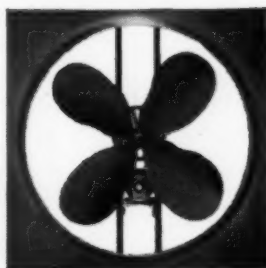
HOMES BEING BUILT  
with  
*ModernAire*  
ATTIC  
FANS...




Homes and buildings now being planned and built with ModernAire Attic fans are investments in "Temperatures For Comfort" that will bring years of satisfaction and contentment to the owners.

ModernAire Attic Fans are famous for their expert engineering, fine construction and smooth, economical performance. Investigate now the advantages and costs of ModernAire Attic fans for builders. Write to . . .

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Golden Opportunity to share in the  
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THE Silver Anniversary Exposition and Convention is the opening door to the next 25 years of progress. You will see the first *truly post-war* equipment—significant improvements and important trends will be revealed—the new fuel-saving installations will be demonstrated and explained.

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greater improvements, more really new ideas, than you will see here! Authoritative speakers will cover engineering, merchandising, and industry problems.

Special programs for the ladies . . . and then—the Silver Anniversary Banquet, star-studded entertainment.

Distributors and dealers the country over are coming. Make *immediate* hotel reservations; write Convention Housing Bureau, 105 West Madison St., Chicago 2, Ill. This Silver Anniversary Show is truly your Golden Opportunity. Plan now to attend.

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**NATIONAL OIL HEAT EXPOSITION**  
CELEBRATING 25 YEARS OF PROGRESS AND  
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THIS LABEL IS YOUR ASSURANCE  
OF THE BEST FURNACE PIPE AND  
ELBOWS OBTAINABLE.



**SUPERIOR  
PRODUCTS CO.**  
606-10 South 14th St.  
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THE BETTER DEALERS IN THE  
MID-WESTERN AND ROCKY MOUNTAIN  
STATES INSIST UPON **SUPERIOR**  
FURNACE PIPE AND ELBOWS.  
MANUFACTURED ONLY BY—

**SUPERIOR PRODUCTS CO.**  
606-10 South 14th St.,  
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**Sell** CONVENIENCE  
and COMFORT  
For Extra Profits

WITH

**Paragon**



ATTIC and  
WINDOW FAN  
CONTROL



There's extra profit in selling convenience and comfort! Home owners everywhere are a ready market for Paragon AF Timers for the control of attic and window ventilation fans in their homes. They welcome the extra comfort of cooling fans . . . the convenience of having fans controlled automatically.

- Telechron Motored . . . Quiet
- 2 Time Ranges, 0-10, 0-20 Hrs.
- Cap. 3/4 HP at 115V AC.

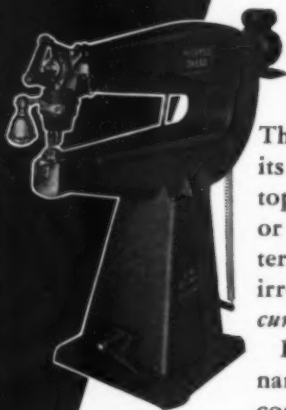
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ELECTRIC COMPANY

1608 12th Street  
**TWO RIVERS**  
WISCONSIN

# Libert <sup>Hi-Speed</sup> SHEAR

CIRCLE CUTTING  
ATTACHMENT  
Included as  
STANDARD EQUIPMENT  
with this Machine



MODEL  
1236  
36-in. throat  
12-gauge capacity.

WRITE FOR  
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The *Libert* has amply proved its advantages by turning out top production—shearing flat or formed sheet metal, internal or external, plain or irregular shapes *rapidly, accurately, cleanly!*

Equally effective in maintenance work, *Libert* is cutting costs to rock bottom. Edges are smooth, need no finishing. Unskilled operators produce accurate work at once.

Sizes up to  
60-in. throat, 10-gauge capacity.

**LIBERT MACHINE COMPANY**  
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## Installation Time Cut with the

MODERN

### FLOOR FURNACE

YOU can install the MODERN Floor Furnace quickly and easily because you install it **WITHOUT REMOVING THE BURNER**. Just cut the hole in the floor and wall and drop in furnace. You don't have to attach burner after furnace is in wall. No trap door, no patching. Overall depth of only 24 inches makes basement or pit unnecessary. **ONLY FLOOR FURNACE WITH CONCEALING WALL REGISTER AND FLOOR GRILL**. Economical to operate. Approved by A.G.A. Guaranteed for 10 years against corrosion—1 year against defects. At present available in only 57,000 B.T.U. dual model.

**Immediate Delivery**  
Now  
**Write Now for**  
**Complete Details**

**MODERN FURNACE & DEVELOPMENT CORP.**  
1334 Gladys Ave. Long Beach, Calif.



to 4½ to 5 percent with corresponding shrinkage, while in the summer with high humidities, it may take on moisture to the extent of 9 or 10 per cent, possibly more, with corresponding swelling. Wood, therefore, is dried by the manufacturer to a particular "mean" moisture content to conform with the humidity of the atmosphere under which it will be used. However, the important point here is that conditions of humidity in most of our homes and buildings today vary to such extremes from winter to summer, that even though wood may be dried to meet the "mean" of these extremes, the swelling and shrinkage is of such proportion as to cause considerable damage.

### How Wood Is Dried

Lumber used for home construction, such as rafters, joists, studs, sub-flooring, finished flooring, finish and trim, moldings, et cetera, as well as lumber used for the manufacture of household articles should be kiln dried, as it seldom is possible to air-dry lumber in the open air below a 15 per cent moisture content no matter how long it is kept. Briefly, the kiln-drying of lumber is a matter of placing properly piled lumber in a "box-like" building in which the temperature of air, the relative humidity and circulation of air are controlled. By scientifically lowering the humidity and raising the temperature, together with air circulation, lumber may be kiln dried to a very low moisture content and with no damage done to it. All kiln dried lumber is dried to a particular moisture content so as to be at a point of equilibrium with the relative humidity of the air where it will be used.

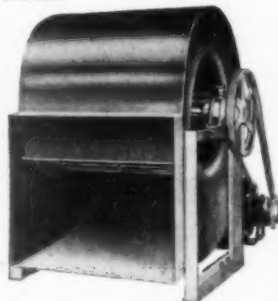
## GRAND RAPIDS DIE & TOOL CO.

manufacturers of

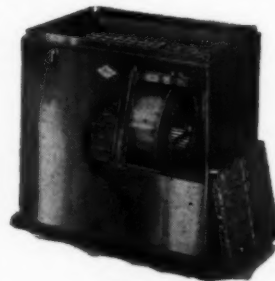
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built for the home and  
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Type B Assembly Belt Drive  
Blowers, Rear and Top Motor  
Mounting, Sizes 6" to 16"



Above, Package Blower  
Units, Series 2000

**WILL PIONEER NEW DEVELOPMENTS  
AND IMPROVEMENTS IN THE  
AIR MOVING FIELD.**

Ask your jobber or write for complete descriptive  
information.

1517 Madison Ave. S.E.

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# You Profit More with **ANCHOR** STOKER

**because you make fewer  
FREE SERVICE CALLS**

You keep a greater percentage of your profits when you sell ANCHOR STOKERS! Once the dependable ANCHOR is installed, there's seldom any need for free servicing.

ANCHOR'S safe, smooth and silent operation continues year after year to deliver trouble-free heating. This means customer satisfaction!

This also assures you more consistent profits as an ANCHOR dealer! Anchor Division, Stratton & Terstegge Co., Inc., P.O. Box 311, New Albany, Indiana.



## JOHNSON BENCH FURNACES

### No. 101 Bench Furnace

Most powerful, efficient, and economical bench furnace made for heating soldering coppers up to 12 lbs. per pair. Delivers up to 1800°F. without a blower. Also used for heat treating, annealing, and case hardening carbon steels. Firebox 3¼ x 4½ x 5½. Complete with work rest block and baffle plate.



### No. 118 Combination Bench Furnace

Excellent for heating largest soldering coppers, branding irons, stenciling irons—tempering, annealing, case-hardening, and soft-pipe and metal melting. Lid on hood may be removed and 22 pound capacity melting pot inserted. A most efficient, economical and powerful furnace. Write for details and prices.



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## QUIET OPERATION

WITH THE

*Am-Pe-Co Unipack Blower*

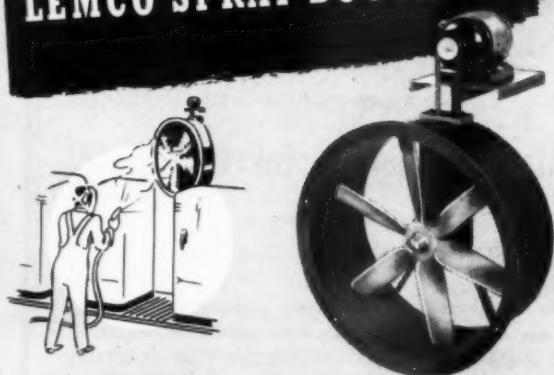
**"Quiet as a Cat's purr"**

Furnace blowers are much the same in construction and operation and it takes painstaking attention to detail to manufacture one that really stands out. We've been making the Unipack Blower to the same consistently high standards since 1929, it is, in fact, custom made, since we do not use mass production. Unipack Blowers will install with a minimum of difficulty and will operate for many, many seasons at top efficiency and with the very nearest approach to absolute silence. Two quickly removable service doors permit ready inspection as well as changing of filters. It's really "quiet as a cat's purr" and a little investigation on your part will convince you of its sales possibilities. Please write us today for literature.

**American Machine Products Co.**

**MARSHALLTOWN, IOWA**

## LEMCO SPRAY BOOTH FAN



**AVAILABLE FOR IMMEDIATE DELIVERY  
... WITH EXPLOSION-PROOF MOTORS**

Cure your spray booth problems with this LEMCO unit engineered and designed for all applications requiring the positive elimination of hazardous fumes and vapors. Enclosed ball bearings, 6 wing perfectly balanced blades, adjustable motor mount, heavy steel construction, maximum air delivery and quietness of operation are some of the features making this LEMCO fan ideal and practical.

Available in 18" and 24" sizes.

Write today for information and catalogue of complete line of ventilating equipment and parts.

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NEW DESIGN  
NEW FEATURES

## THE ECONOMY... FOOT POWER SHEAR

Capacity 36 to 52 inches. 18 ga. and lighter.

All steel welded construction, capacity to 18 ga. soft steel. Top knife bar strongly braced and provided with adjustable bronze gibs to compensate for wear. Blades of highest grade tool steel tempered and carefully ground to give maximum service before regrinding. Adjustable front and rear gauges, quickly set for different sizes. Spring actuated hold-down will clamp material firmly to the bed.

To Cut Material 36" Wide.....	\$225.00
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All prices F.O.B. Chicago — Prompt Shipment

Exclusive Distributors

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Work goes faster—jobs are more profitable when you tin with TINIT. Cleans, tins and fluxes stainless steel, black iron, hard-drawn copper and all metals in one quick operation. Sold by refrigeration service, tinning supply, automotive and others jobbers for 20 years.

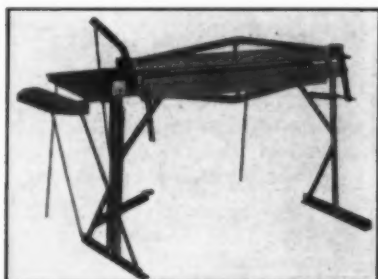
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## HARRIS BRAKES

Portable - Sturdy  
All-Purpose  
Brakes



The 4' Brake weighs 175 lbs. Can be ready to transport by removing 4- $\frac{3}{4}$  nuts in 5 minutes. Folds into a bundle 5'-x 11" x 6". Easily handles 26 ga. iron. Has Slip Off Feature. 2-Tool Benches. Indispensable if you work on the job.  
**THE BOBBIE 1 ft. BRAKE** Handles 26 ga., is for Small Fast Jobs as Boxes — Outlets, etc., where production and ease of operations are important.

**A. R. HARRIS**

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## Availability of Kiln-Dried Lumber

Practically all large softwood sawmills maintain their own batteries of dry-kilns and dry the various lumber items to a specific moisture content depending upon its ultimate use. Many of the larger sawmills are now supplying retail lumber dealers with guaranteed moisture content lumber, and are in a position to fill orders calling for any specific moisture content lower than those provided in the standard specifications. It is important that contractors and home builders should be aware of the availability of kiln-dried lumber, dried to a definite moisture content, and they should always see that their bill of specifications embodies this point. Hardwood lumber, on the other hand, being largely employed for various remanufactured articles such as furniture, is usually kiln-dried at the manufacturing plant, and not at the sawmill, in order to meet the exacting requirements of the manufacturer for the innumerable products which are made from the various species of hardwood.

## Damage Due to Air Circulation

It can thus be seen that progressive manufacturers of lumber or other wooden articles for our homes have gone to the utmost care in supplying products dried to a proper "mean" moisture content, which should give satisfactory service in use. The fact that damage often occurs can well be ascribed in many, many instances to our lack of controlling the extreme of relative humidity which occurs in most homes today. The importance of controlled humidity through air-conditioning will be shown in Part II of this series.

## Only \$2.00 for This Outstanding Book on Air Conditioning

THIRD EDITION

## Air Conditioning for Comfort

By Samuel R. Lewis

288 Pages—6 $\frac{1}{2}$  x 9 $\frac{1}{2}$ —Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known **AIR CONDITIONING FOR COMFORT**. Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

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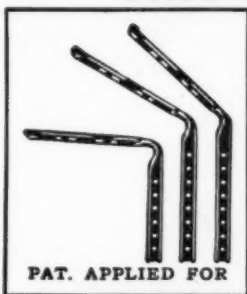
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33 1/3% STRONGER**

IMPROVEMENT IS APPLIED TO  
No. 15—SQUARE, No. 18—1/4  
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SOLD THRU LEADING  
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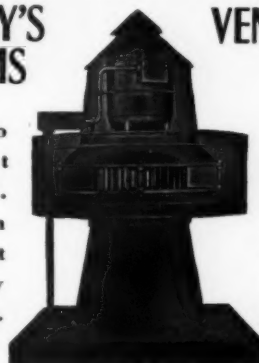


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PROBLEMS**

**VENTILATING  
SOLVED!**

No belts to  
slip. Direct  
connected.  
Sets up on  
the roof out  
of the way  
of everything.



A compact, self-  
contained unit  
easily and  
cheaply in-  
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*Automatic Oil-Burning*

**Furnaces—Water Heaters**

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**DASCO**  
*Forged Hand Tools*

Chisels, punches, drills,  
screw drivers, nippers  
and numerous other hand  
tools... quality built for  
long service. Sold by  
leading jobbers.



**DAMASCUS STEEL PRODUCTS CORP.**  
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**REMOVE SOOT AND CARBON QUICKLY**



An **ALL PURPOSE** Soot Remover that thoroughly  
cleans all types of burners while hot.

Approved by oil burner manufacturers and testing laboratories. Will  
not clog holes, leave a residue or overheat vital parts. Also effective  
in gas and coal units. Special Clean Sweep sprayer for faster, more  
economical service available.

"CLEAN BURNERS SAVE FUEL"

**CLEAN SWEEP CO.**

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LOOK FOR THE BROOM ON THE PACKAGE

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**EXCLUSIVE PRODUCERS**

**ALL SHADES**

Of The Famous  
**NO. 65 S AND NO. 42  
CHROME FINISH PAINTS  
1000 HI-HEAT ALUMINUM PAINT  
E. M. GOLDEN LUSTRE GOLD PAINT**

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**BRONZE  
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Industrial & Automotive Finishes  
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BOILERS, STOVES • Guaranteed to FIT**

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**BLOW-PIPE PARTS**

One-piece pressed Elbows,  
from 3-inch to 14-inch di-  
ameter, of 22- to 18-gauge  
metal, also Blast Gates, or  
Cut-offs. Ball Joints, Ad-  
justable Hoods, Rolled and  
Pressed Steel Rings and oth-  
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low cost by production  
methods. Write for litera-  
ture and prices.



Ball Joints  
Any Size

One-Piece  
Pressed Elbows  
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2880 SPRING GROVE AVE.



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### STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

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## Chicago Steel Bending Brake



STANDARD HAND BRAKE  
ONE MAN OPERATION

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7404 LOOMIS BLVD. CHICAGO 36, ILL.



## "CRARYS" RAIN WATER CUT OFFS

Made in all Standard  
Conductor Pipe Sizes.  
Plain Round and Cor-  
rugated Round.

Write for Prices and  
Name of your nearest  
Jobber.

**GALVAN MANUFACTURING CO.**  
New Albany, Indiana

## 8th Exposition—

(From page 129)

ing engineers and will appear in the official publica-  
tions of the Society. Included were papers on design  
data, an improved method for rating air filters, solar  
heat transmission through glass, and downward pro-  
jection of heated air.

"A New Method for Selecting Winter Design Tem-  
peratures" was proposed in a paper by Clark M.  
Humphreys of the ASHVE Research Laboratory in  
which the author supported his conclusions for varying  
design temperature with construction and occupancy  
with the following reasons:

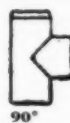
1. The daily minimum temperature usually prevails  
for such a short period of time that, because of heat  
storage within the structure, its effect on the heating  
load is negligible.

2. It is customary to make heat loss calculations and  
design heating systems on the assumption that the  
system must furnish all of the heat to the space. This  
is never true. Instead, the average building receives  
appreciable quantities of heat from the sun, lights, oc-  
cupants, mechanical processes, and other extraneous  
sources. The room heaters which have been sized for  
100 percent of the calculated room loss are helped by  
the exposed or concealed piping to them.

3. A system that is oversized is difficult to control  
and may cause more discomfort in average winter  
weather than a somewhat smaller system will cause  
on a few extremely cold days. The smaller system  
will also be lower in first cost and will operate more  
efficiently throughout the heating season.



90°



90°

**GRAY'S  
TIME  
SAVERS**



45°



30°

SET No. 1—ELBOW PATTERNS—1" to 20" in 2-3-4-5-6 & 7-piece, T-patterns  
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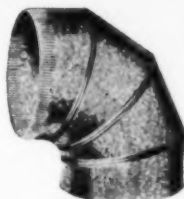
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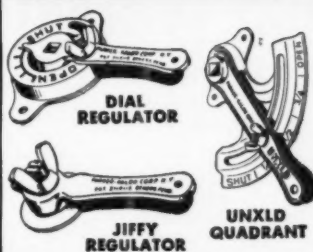
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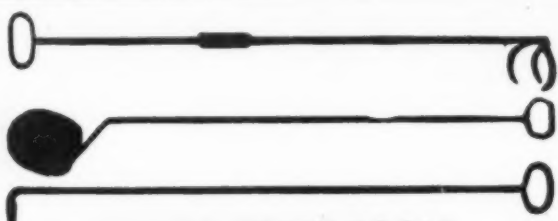


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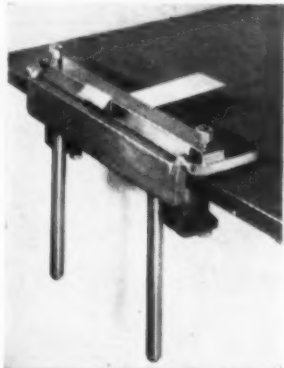
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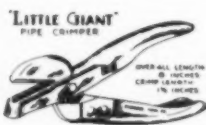
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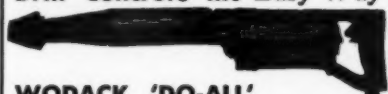
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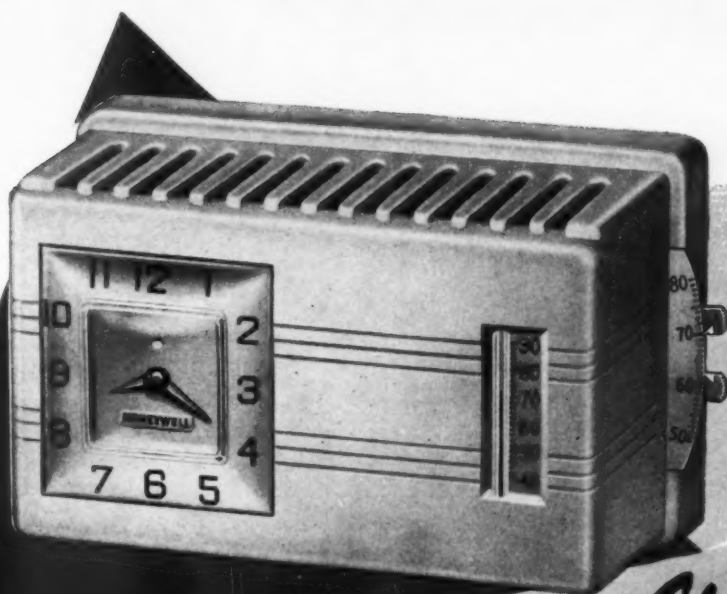
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THAT GOES FOR  
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WHEN IT'S  
BEHIND THIS  
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